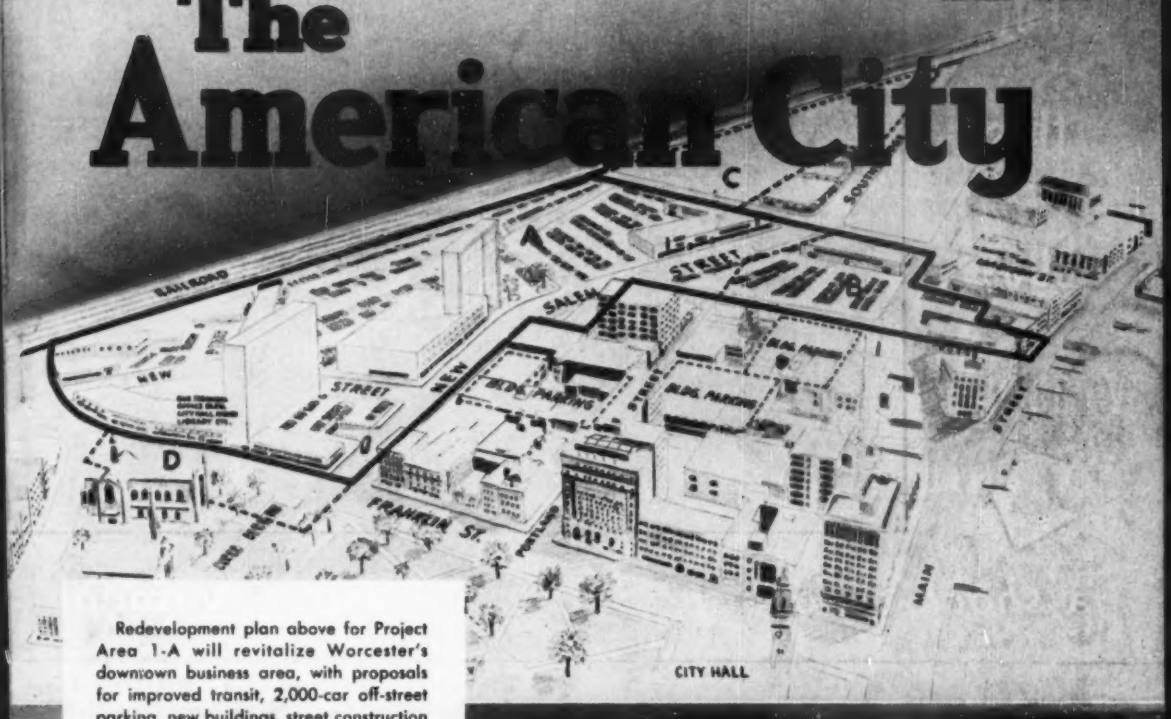
APRIL 1952

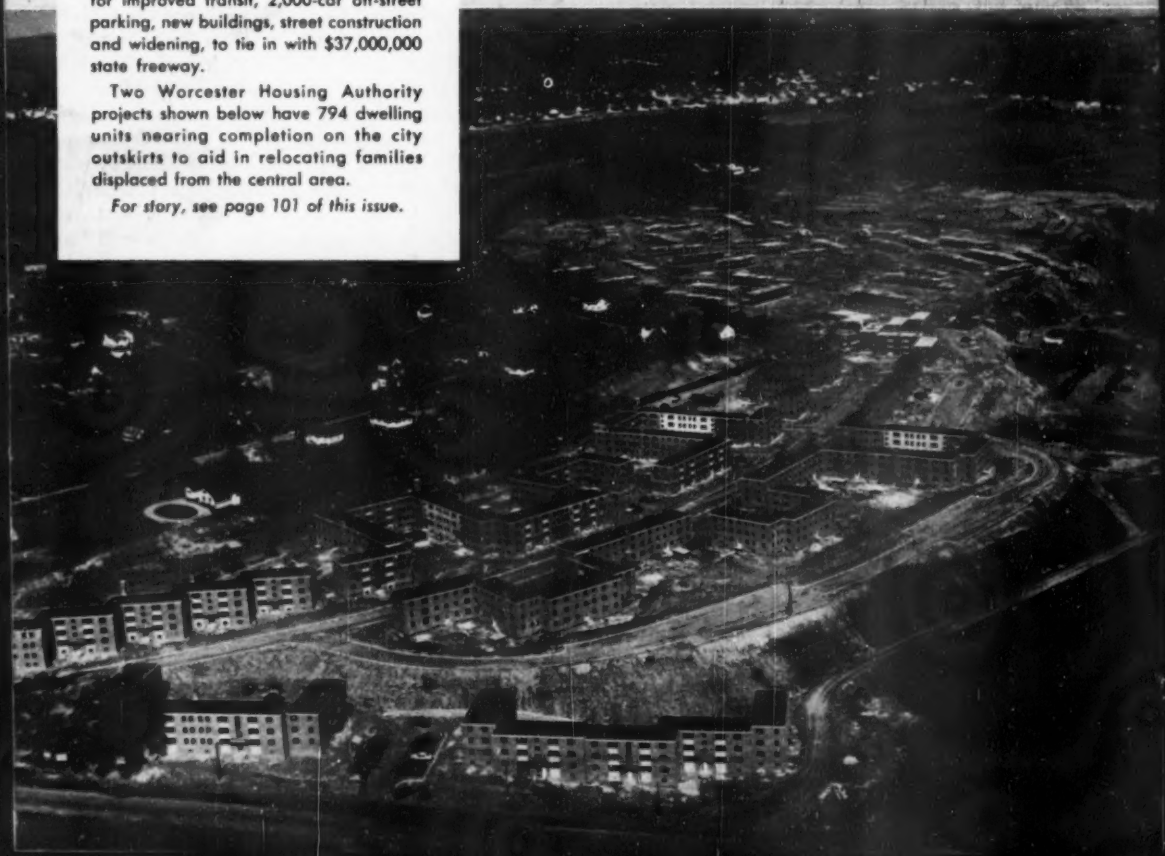
The American City



Redevelopment plan above for Project Area 1-A will revitalize Worcester's downtown business area, with proposals for improved transit, 2,000-car off-street parking, new buildings, street construction and widening, to tie in with $37,000,000 state freeway.

Two Worcester Housing Authority projects shown below have 794 dwelling units nearing completion on the city outskirts to aid in relocating families displaced from the central area.

For story, see page 101 of this issue.



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The city of Milwaukee's 35th Street Viaduct is one of its busiest traffic arteries. More than 23,300 vehicles cross over this viaduct in a 24-hour period. As you will note from the above photograph, a large proportion of these vehicles are trucks and buses.

It became necessary last year to remove the viaduct's old, worn pavement. In its place, Milwaukee constructed a dense, resilient Texaco Sheet Asphalt surface. The exceptional ability of Sheet Asphalt to absorb heaviest impact, its freedom from joints, unsurpassed riding quality and low upkeep cost have made it a top favorite among pavements constructed on city streets.

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THE MUNICIPAL INDEX and ATLAS (over 900 pages), published annually by the American City Magazine Corporation, when used with the current advertisements in THE AMERICAN CITY, provides officials with the latest information on all types of municipal equipment and supplies.

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"LISTEN! THERE IT IS AGAIN! IT'S LOST!"

The Call that Saved a Plane

How an alert telephone operator helped a military transport plane land in a snowstorm in the dead of night

A heavy snow was falling in the winter darkness when Mrs. Lucille Wilson, night operator at Alamosa, Colorado, heard the sound of a low-flying airplane. It was well past midnight and Mrs. Wilson knew that the last scheduled airliner had gone over many hours before.

Then she heard the sound of a low-flying plane again as it circled back over the town.

A light flashed on Mrs. Wilson's switchboard. Soon as she said "Number please" an anxious voice said – "This is Ralph Zook, dispatcher down at the railroad depot. Did you hear a plane? Didn't sound right, somehow. It's flying pretty low."

"I heard it, too," said Mrs. Wilson. "And there's no plane scheduled this time of night."

"That plane could be in trouble," said Mr. Zook. "We ought to do something about it."

"I'll try to reach someone to turn on the lights at the airport," said Mrs. Wilson. "Listen! There it is again! It's lost!"

Quickly Mrs. Wilson went into action. She called the airport, the government weather station, and a private flying service. But no one answered.

Then she reached Stamy Edmisten, an airline employee, at his home. He rushed to the airport and turned on the landing lights. A few minutes later a C-46 military transport loomed out of the snowstorm and came in for a safe landing. Thirteen men stepped from the plane, none the worse for the experience.

What could have been tragedy was prevented by quick-acting Ralph Zook and Stamy Edmisten and the alert, cool-thinking operator, Mrs. Lucille Wilson—one of about 650,000 telephone men and women guarding and serving America, twenty-four hours a day, in every kind of weather.

The landing lights were turned on and the big C-46 came safely to earth.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Mayors' Conference Urges Congressional Study of Intergovernment Relations

EXPRESSING THE FEAR that, if present trends continue, independent local self-government may diminish in effectiveness because of increasing financial dependence upon other levels of government, the United States Conference of Mayors has joined with a governors' conference committee (consisting of Governors Driscoll of New Jersey, Stevenson of Illinois, and Kohler of Wisconsin) and with other groups, in issuing a memorandum urging the creation by Congress of a Commission to Study Intergovernmental Relations.

In a statement issued March 13, Paul V. Betters, Executive Director of the United States Conference of Mayors, quoted this memorandum in pointing out that:

> An increasing number of people believe that it is now time to appraise in a comprehensive manner the *duties and responsibilities of each area of government in our federal system* — this reappraisal to be conducted in the light of the new situation in which our country finds itself, and which will probably be with us for years.
>
> It has been many years since an official, responsible group has considered this major question. During these years, profound changes have taken place in our social and economic system and in our international relations. Present financial difficulties and fiscal problems will be an integral part of this constructive study — a study which may result in strengthening the foundations of an American system which resides in local responsibility, local control, and local self-government.

Atlanta Continues To Look Ahead

THE FIRST REPORT of the Metropolitan Planning Commission of Atlanta, issued in March, has been widely acclaimed and publicized for its comprehensive view of the region's prospects and requirements.

The report was the result of two years' work on the part of a 14-man group established by legislative act in 1947, but which did not begin to function until 1950. The Commission is an advisory body, supported by public funds, which can plan and recommend but has no power to act.

The report points out that, being located on a ridge, unhampered by water, mountain ranges, or other natural geographic boundaries, Atlanta can grow in all directions. The population is expected to increase from the 563,300 recorded in the 1950 census to 880,000 in 1980. Industrial space is expected to double in the next eight years, and, to meet this demand, the Commission urges eight proposed industrial-expansion areas, all but one on the fringes of the present urban area.

Other recommendations in the report include 300 miles of new superhighways; four truck terminals in the four quadrants of the city; a strong transit system; 12,000 acres of parks instead of the present 2,750 acres; major reorganization of Atlanta's railway facilities, including a single, central passenger terminal; consideration of another major new airport, and one or two more intermediate dams, in addition to the Buford Dam now under construction, to insure an adequate water supply.

St. Louis Aldermen Encourage 'Beef Sessions'

CITIZENS and city officials in St. Louis have been getting together to let their hair down about local government in a series of "beef sessions" sponsored by the Public Welfare Committee of the Board of Aldermen. According to local officials, results have been good. Not only have taxpayers been given a chance to let off "steam," but the sessions have proved useful in a two-day exchange of information, ideas, and suggestions between taxpayers and officials.

Meetings are held in the evening, and attended by municipal department heads, who are there to answer technical questions relating to their departments, as well as by the aldermanic committee.

Among items discussed and explored at the first meeting in February were transportation, public fly-ash control, pedestrian control, traffic regulation, police-court procedure, civil-service administration, parking meters, express highways, and efforts to attract new industries to the city.

Is Your City Clerk A Member of NIMC?

SINCE THE RECENT affiliation of the National Institute of Municipal Clerks with the "1313" group of organizations in Chicago, NIMC's membership has shown a substantial increase. President Arthur J. Shinners (Town Clerk of Brookline, Mass.) reports that 150 clerks, recorders, and secretaries have become members since October 1951, and that indications point to a total membership of 1,000 before the 1952 meeting in Dallas, May 21-23.

Information from the Reference Library at 1313 East 60th Street, Chicago, which is available to members of NIMC, is proving of inestimable value. This library, which serves the 22 organizations with headquarters in this Public Administration Clearing House building, contains the most complete and best catalogued collection of municipal information to be found anywhere.

Membership fees are based upon population. The minimum fee is $10 for municipalities up to 20,000; for cities and towns up to 50,000, the fee is $15; for municipalities up to 100,-

The American City Quiz

Match Wits with the Experts

QUESTIONS

1. ***When a municipality makes extensions to its water-distribution system how should it finance the work?***
2. ***How large a chlorine residual is recommended for swimming-pool sanitation?***
3. ***How much saving can be anticipated if leaves are collected from city streets by means of a leaf blower?***
4. ***What is the smallest size a community can be to make practical use of a mechanical street sweeper?***
5. ***What will the cost of building sewage-treatment facilities be per person served?***
6. ***Is there a simple, inexpensive way to rehabilitate streets that have become irregular because of wavy surface treatments?***
7. ***How many parks and recreation areas should a well-planned municipality have?***
8. ***What will be the increase in the strength of purely domestic sewage if the kitchen garbage grinders put the garbage into the sewage?***
9. ***Should police boxes be available for use by the general public?***
10. ***Does any large city have fluorescent street lights?***

(Answers on page 9)

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000 they are $25; for 200,000, $40; 300,000, $50, and over 300,000, $100.

For the coming convention at the Hotel Baker in Dallas, Harold G. Shank, City Secretary of Dallas, is serving as Conference Chairman. Panel discussions and group meetings will be important features of the conference.

Oklahoma Municipal League Accepts Individual Members

THE OKLAHOMA MUNICIPAL LEAGUE, with headquarters located at Oklahoma City, recently ratified a constitution setting forth special memberships for individual employees of member cities. The League now takes in governmental units with provisions for special members and educational members. Later on this may be broadened to take in other classifications.

Memberships are coming in at a good rate, and it is hoped that good results will be shown in the legislative program. Gerald Wilkins, City Manager of Enid, is chairman of the legislative program committee, which has already met and started mapping its work for next year.

Publication has been started again of the "Oklahoma Municipal Review," on a monthly basis. The magazine was published for years and then was suspended during World War II. It has not been published since, except for two issues, until last September when the resumption was made.

The League is controlled by the Board of Directors with its Executive Director, Dave Fudge, located in Oklahoma City. The charter is established in such a way that the control is by the governmental units with the employee group represented as well.

J. ORVILLE BUMPUS
Chairman, Publicity Committee
Sapulpa, Okla.

Millions for Improvements Result of Fiscal Planning

UNDER THIS HEADING, *Rochester Commerce*, the monthly magazine of the Rochester (N. Y.) Chamber of Commerce, carries in its February issue an article which tells how, as a result of sound financial planning, Rochester will be able to spend some $40,000,000 on capital improvements in the next five years. The author is Robert P. Aex, comptroller of the City of Rochester until January 1, 1952, when he resigned to become city manager of Newburgh, N. Y.

"Rochester's civic-improvement program," says the author, "will be a major step in solving the traffic problem through the city-state arterial highway plan. Much-needed civic buildings, additional school facilities, and the many other improvements which a prosperous community requires for the health, safety, economic welfare, and recreation of its citizens can be realized."

A long-time financial plan adopted by the City of Rochester had as its objective the reduction and eventual elimination of the city's debt by (1) paying off the existing debt; (2) holding new debt for capital improvements to a minimum, and (3) eliminating the necessity for tax delinquency debt by providing a reserve for such delinquencies.

The financial plan envisioned that by about 1950, the city would embark upon a modest program of civic improvements without bond issues. Necessary financing would be carried through the issuance of low-interest-rate, two-year capital notes. The plan was aimed at the inclusion of an ever-increasing provision for capital improvements in the annual budgets on a cash basis beginning about 1953.

The accompanying chart shows how, with a stable population of about 330,000, Rochester's net debt has been decreased from about $64,000,000 in 1938 to some $23,000,000 in 1951.

Mr. Aex's timely article concludes with the following observations:

The question which many Rochesterians are asking is: Can we get on with many needed civic improvements and not upset the financial plan which is so near to completion? The answer is an emphatic "Yes." However, certain limitations must be observed:

(1) The city should never again resort to expensive long-term bond issues. Past experience has proved the folly of this. Rochester's present financial condition eliminates the necessity of the same.

(2) Capital improvements undertaken in 1952 and subsequent years should be financed within the limitation of the present real estate tax which is being levied for debt.

(3) Savings in interest because of debt reduction should be diverted to capital improvements on a cash basis.

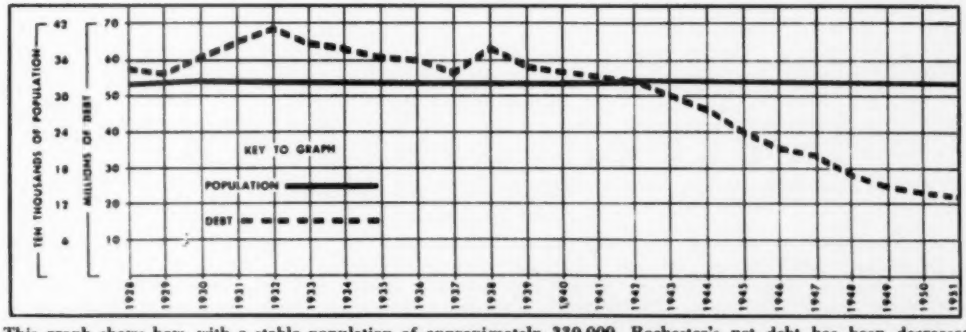
If all these things are done, Rochester will find itself with sufficient capital-improvement money in view of the present economic conditions. In the event our war economy returns to normal, Rochester's improvement program may be an important factor in providing work during a period of transition from a war-time to a peace-time economy.

Why Did I Stand For the Council?

ANSWERS TO THIS QUESTION from several local-government councilors and aldermen are an interesting feature of the March issue of our British contemporary, *Municipal Review and Borough*. The principal reasons cited in one or more of the replies were:

- Interest in politics
- Inadequate representation of the candidate's political party on the local town council
- Search for self-expression
- Desire to help people and to render public service
- Belief that younger blood was needed in the council
- Ambition to have an active part in the shaping of things to come

Similarly frank and high-grade replies might be expected, we believe, if this inquiry were to be addressed to city councilmen and commissioners in the United States.



This graph shows how, with a stable population of approximately 330,000, Rochester's net debt has been decreased from about $64,000,000 in 1938 to some $23,000,000 in 1951.

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3451

Construction Controls Eased

EVIDENCE that shortages are lessening for materials used for defense-mobilization purposes is the National Production Authority's recent easing of construction controls which have now all been combined, except those for private homes, in a single document.

The new order allows an increased tonnage of steel for schools, highways and public buildings, and clears the way for completion of all projects underway. The NPA had previously approved 646 new starts in municipal, community, and religious projects, as well as completion of 186 projects already started. Up to 25 tons of steel now may be self-authorized for each municipal road-building project, though only 2 tons of this may be in the form of structural shapes. Further liberalizing orders are expected.

The Power to License Is Not Power to Tax, Court Holds

POWER of Minnesota municipalities to license and regulate certain businesses does not carry with it the power to tax such enterprises for revenue-raising purposes, the State Supreme Court held on February 29, in invalidating a 1946 Minneapolis city ordinance raising the streetcar-license fee from $25 to $100 annually.

The city had appealed from the ruling by District Judge Levi M. Hall that the ordinance proposing the increase was "unreasonable and excessive."

In an opinion by Justice C. R. Magney, the State Supreme Court said that the ordinance as amended in 1946 to raise the fee was invalid because the increase was "excessive and unreasonable," as the Minneapolis Street Railway Company had contended.

The high state tribunal held that the proposed $100 fee bears no relation to the cost shown to be incurred by the city in the exercise of its statutory power to regulate and supervise street-railway operations.

Industrial Promotion Can Be Too Hasty

SOME OF THE HAZARDS of too zealous and hasty community industrial promotion and solicitation have been evident in Renovo, Pa., where the 4,000 inhabitants have been fighting to prevent foreclosure of a shirt factory they built themselves.

The Mylan Manufacturing Company of New York, which makes men's sports shirts, agreed to locate a shirt-making unit in Renovo, and pay a yearly rental of $3,750, and taxes and insurance, if the city would build a factory at its own expense. The Community Trade Association had sought such an industry to lessen Renovo's almost complete dependence on one industry—the Pennsylvania Railroad shops.

More Funds Needed

The sum of $125,000 was raised and the factory was completed, but rising construction costs resulted in a total bill for it of $200,000. The 185 shirt-factory employees pledged to pay $10,000 of the $75,000 deficit, but the balance looms large. Townspeople have had no other recourse, being faced with the threat of foreclosure by the creditors, than to attempt to raise money through all sorts of devices—variety shows, dances, spaghetti dinners, bingo parties, contributions from shopkeepers, etc.

Harvard Research Fellowship

THE DEPARTMENT of Regional Planning in the Graduate School of Design at Harvard University has announced a research fellowship in city planning amounting to $1,000 for the academic year 1952-53. The fellowship is an outright grant and will be awarded to an applicant whose background and previous education is such that he may be expected to receive the Master in City Planning degree within two years. Application forms may be obtained from the Secretary of the School, and should be completed promptly. For further information, write to Professor W. L. C. Wheaton, Chairman, Department of Regional Planning, Hunt Hall, Harvard University, Cambridge 38, Mass.

The American City Quiz

ANSWERS TO QUESTIONS ON PAGE 5

1. According to Charles Haydock, Philadelphia consulting engineer, there are three methods used frequently in Pennsylvania. One is to add approximately 20% to the water rate charged in the new areas served; this method is used by the Beaver Falls Municipal Authority. The second is to require a deposit equal to the cost of construction, and then make a refund equal to five times the annual water bill to each customer who connects; this is used by the West View Municipal Authority. The third is to require from each customer a deposit covering the entire cost of construction, and then refund 2½ times the estimated annual revenue as each customer connects; the Municipal Authority of Westmoreland County uses this method.

2. Eric W. Mood, Director of Environmental Sanitation of the New Haven, Conn., Health Department, recommends 0.4 to 0.6 ppm of free chlorine residual to produce satisfactory results. The minimum value of 0.7 ppm chloramine or combined available residual is insufficient, he feels.

3. Arthur Richards, Village Engineer of Larchmont, N. Y., found that by using a blower he needed only 1,300 man-hours of labor and 324 truck hours. Previously, he had needed 2,000 man-hours and 600 truck hours. The blower is a product of the Leaf Loader Division of the American Structural Steel and Tank Company, Detroit, Mich. The trailer that receives the leaves was made in the village shop.

4. That depends on the sweeper used. Arlington, Wash. (population 1,600), uses the small-model Wilshire street sweeper and finds it five times faster than a man with a broom. The community has eight blocks of main streets and 13 blocks of other streets to clean.

5. For a population of 25,000, the costs will average $5.60 per capita for primary treament; $17.60 if trickling filters are added; $10.40 if high-rate filters are used; $12 if activated-sludge treatment is used. These are figures of the Stream Pollution Study Commission appointed by the Governor of Tennessee, and were issued early in 1951.

6. Streets that have become irregular and still have a tough surface suffer because of a weak base. In St. Paul, Minn., this difficulty is corrected by mixing the surface with a portion of the base to stabilize it. A scarifier breaks up the pavement along with a half-inch of subgrade; then an Athey Mobiloader picks up the broken fragments and delivers them to a crusher following along on a trailer. If more asphalt is needed, it is added by distributor, along with the additive, Nostrip, at the rate of 1½% of the asphalt by volume. This helps the asphalt to cling to the aggregate even in spite of wet soil conditions.

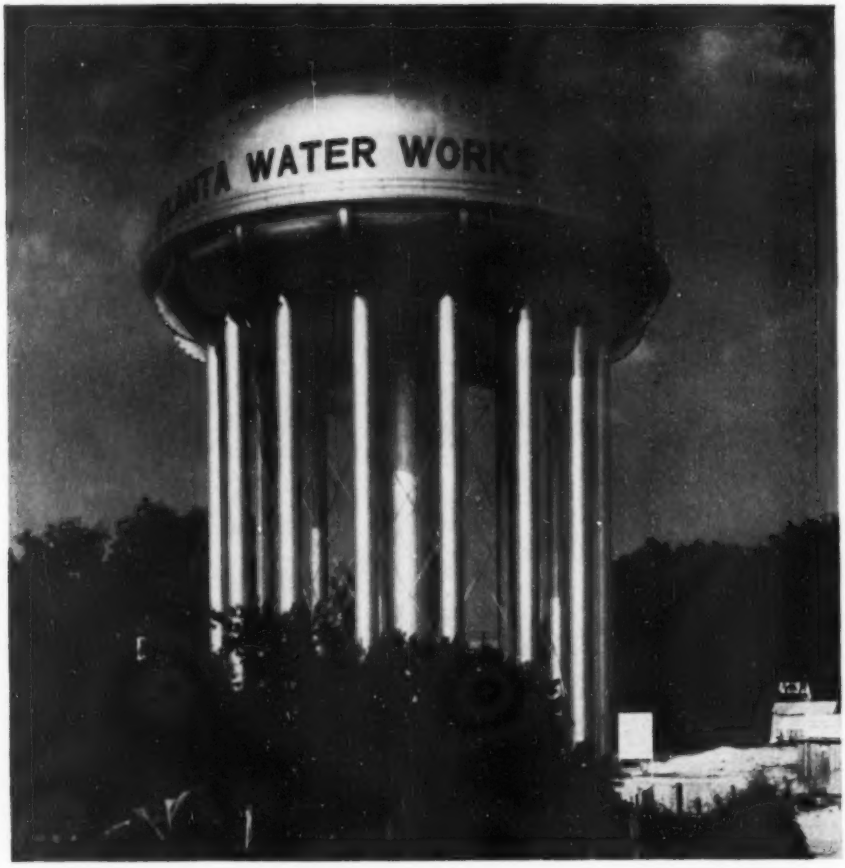
7. It should have one acre of parks for every 800 to 1,000 persons and one acre of active recreational area for every 400 persons, according to Thomas C. Jeffer, landscape architect. These should be within one mile of the homes of the people served.

8. The kitchen garbage grinders will add 0.05 pound of suspended solids, an equal amount of total BOD, and 0.03 pound of grease to the domestic sewage for each person per day. These figures represent findings of A M Rawn, Chief Engineer and General Manager of the County Sanitation Districts, Los Angeles County, Calif., and are based on findings in an area of 4,000 people where each home is equipped with a grinder and the arrangement of the sewers makes analysis easy.

9. In Philadelphia, the answer is yes. This city opens both fire and police boxes to emergency public use. An amber light identifies the fire-alarm box. A blue light is the police box. The lights are Crouse-Hinds, weatherproof condulet. There are Scotchlite fire signs on the sides of the boxes.

10. Detroit is experimenting with this type of lighting. The luminaires are 8 feet long, mounted horizontally. They are rated at 4,000 hours as compared to 1,650 hours for the incandescent lights, and are a General Electric product.

Send in your suggested questions with the answers on municipal topics for use in this feature. THE AMERICAN CITY will make a small payment for each question accepted.



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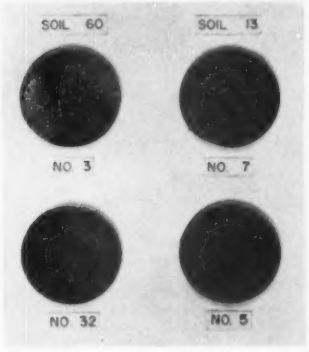
Boston 10	1002—201 Devonshire St.	Philadelphia 3	1616—1700 Walnut Street Bldg.
Chicago 4	2127 McCormick Bldg.	San Francisco 4	1633—200 Bush St.
Cleveland 15	2236 Guildhall Bldg.	Seattle 1	1301 Henry Bldg.
Detroit 26	1501 Lafayette Bldg.	Tulsa 3	1625 Hunt Bldg.
Houston 2	2101 C. & I. Life Bldg.	Washington, D. C.	1163 Cafritz Bldg.

Water Supply & Treatment

Stop Pipe Corrosion with —0.77 of a Volt

TAKE —0.77 OF A VOLT of electricity, wrap it carefully around your pipeline, and you can forget about any corrosion between the pipeline and the soil. This is the substance of a report recently issued by the National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C.

The study was aimed at determining a tangible, scientific figure that would prevent external corrosion in steel pipelines. Corrosion is an electrolytic action caused by differences



This shows the protective value of —0.77 volts. The two specimens at left were exposed for 60 days to an acid soil (pH 2.9). The two at right were placed in an alkaline soil (pH 9.5) for the same period. The two at the top had no protection. The bottom two were cathodically protected.

in potential in the pipe. It involves flow of electrical currents from certain areas termed anodes to others called cathodes, with accompanying loss of metal at the anodes and generation of hydrogen at the cathodes. When the cathodic-protection method is used, current from an external anode is caused to flow through the soil to the pipe surface which act as the cathode. If this current is great enough, it overcomes the potential in the pipe that causes the corroding current. The National Bureau of Standards' study showed that —0.77 volt, referred to as a saturated calomel electrode, is the best protective value. Smaller voltages are less effective while larger voltages waste electrical energy.

In the past, engineers have used a value of —0.85 volt, referred to a standard copper-copper sulphate electrode, for cathodic protection. But there is a voltage drop in the soil that is not ordinarily known, so that the engineer may not really know what protective voltage he is actually getting at the pipe. In the NBS laboratory the uncertainties of field measurements were eliminated, so that the voltage arrived at has a firm scientific basis. Although the NBS investigators used a different type of electrode for their standard of comparison, the —0.77 volt value they obtained corresponds to about —0.85 volt in terms of the copper-copper sulphate standard.

The study covered soils ranging from very acid (pH 2.9) to very alkaline (pH 9.6). As was anticipated, the current required to maintain the optimum voltage was not uniform. In most soils, the current value diminished to a fairly stable value after about three weeks.

They found it possible to estimate the minimum protective current initially required for cathodic protection in a particular soil by preliminary measurements.

Toughest Water Supply Valving Assignment

PROBABLY THE TOUGHEST valving assignment in the water-works field is being assigned to a set of thirteen 42-inch ball-type valves made by the Davis Mfg. Co., 321 Maple Drive, Beverly Hills, Calif. The valves will be a part of the South Boulder Creek (Colo.) dam being built by Denver's Board of Water Supply.

The valves will be set in the outlet tunnel and will allow 1,200 cubic feet per second of water to pass downstream to satisfy irrigation requirements. The valve chamber will be cut out of the rock so that they will be protected from winter cold and possible enemy air attack.

The valves will have to operate against a 340-foot head and ultimately against a 460-foot head, since the dam is designed to be raised to this higher level. At a height 160 feet above this diversion channel will be a second valve chamber with two more ball valves that will divert water for power generation.

When to Use Prestressed-Concrete Reservoirs

HOW TO DETERMINE when prestressed concrete will reduce the cost of construction is a problem faced by engineers contemplating its use.

At the first section of the annual convention of the American Concrete Institute, recently held at the Netherland Plaza Hotel in Cincinnati, Ohio, George C. Ernst, C. O. Brunken, and A. R. Riveland of the University of Nebraska summarized data relating to the "Relative Economy of Conventional and Prestressed Reinforced Concrete Reservoirs." On the basis of 260 designs, they concluded that reservoirs built of prestressed concrete have a lower first cost than those of conventional reinforced concrete when the unit cost of the prestressed wall in place does not exceed approximately twice that for a conventional wall. With unrestricted site location and the same controlling water elevation, above-ground reservoirs generally had a lower first cost than underground reservoirs when capacities are 2,500,000 gallons or less. Larger underground tanks could compete with those above ground. Prestressed-concrete construction was said to save from 40% to 60% of steel and from 0% to 35% of concrete normally required for conventional reinforced-concrete construction.

Officials of Denver's Water Board on hand for an inspection of the 42-inch ball valves. Left to right: Eugene Brisbane; Earl Mosley, General Manager; M. M. Marshall, Mechanical Supervisor; D. D. Gross, Consulting Engineer; John Burgess, Chief Engineer, and F. N. Brown, Office Engineer.

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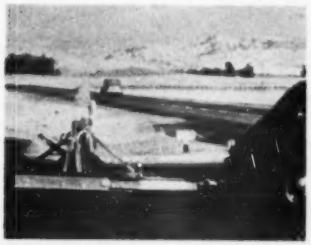
Pavement Is Smoother When Sun Is High

CONCRETE PAVEMENTS are measurably smoother during the heat of the day, thus indicating the warping action of the pavement caused by the moist, cool subgrade and the dry pavement surface.

This is one of the conclusions arrived at following intensive studies made of three concrete pavements. One was a year old and had continuous reinforcing with no expansion joints. The second, also a year old, had dummy joints on 15-foot centers. The third was eight years old, had 15-foot joint spacing, and at one time had been subject to pumping at the joints. However, every joint has been mudjacked and subsealed. All pavements are 8 inches thick.



Between 10% and 25% of the irregularities in concrete pavements are ironed out by the sun's rays each day, according to this University of California roughness indicator.

The first pavement registered 45 inches of roughness per mile at 5:00 a.m.; this dropped irregularly to 39 inches by 1:00 p.m. and then rose again to 54 inches by 6:00 p.m.

The second pavement showed 56 inches of roughness per mile at 5:00 a.m., dropped to 41 inches at 1 p.m.; and then rose again to 56 inches at 6:00 p.m. The third showed 98 inches of roughness at 5:00 a.m.; 92 inches at noon, and 102 inches at 6:00 p.m.

Tentative standards for city streets, based on the Berkeley studies, are as follows:

Roughness Index inches per mile	Riding Qualities
Below 100	Excellent
100-200	Good
200-300	Fair
300-400	Rough
400-500	Very rough

The standards are based on streets where the average operating speeds are in the range of 25 to 30 miles per hour.

The roughness was measured by a Roughometer developed by the United States Bureau of Public Roads. The Roughometer has been used by the Department of Public Works in Berkeley to establish roughness factors for Berkeley streets and to form priority ratings for the street-improvement program.

How to Build Non-Skid Streets

IF YOU PLAN to build non-skid safety into your city streets, two simple rules will help.

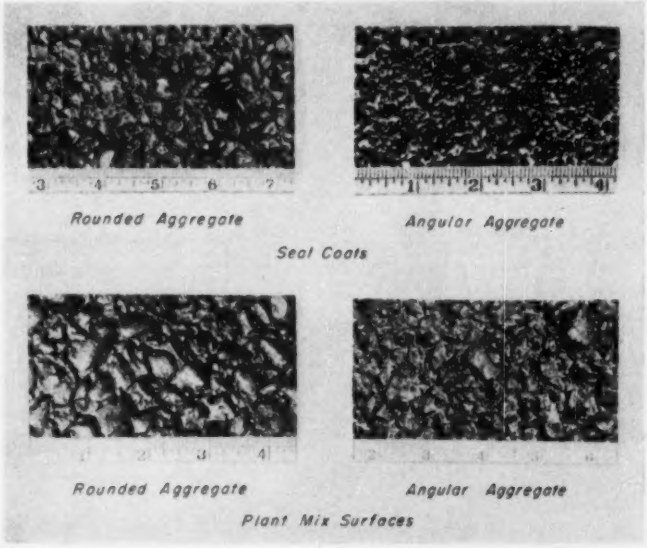
The first rule concerns the choice of aggregate. If you use sharp, angular, crushed stone chips or crushed gravel, you increase the friction value by 25% over surfaces using rounded aggregate. A granite-type aggregate with a coarse-grained structure is preferred to a limestone or basaltic-type aggregate with a fine-grained structure. The wear effect of traffic polishes the fine-grained aggregate, making it smooth and slippery when wet.

The second is on the quality of mix. Best is a mix that produces an open-graded surface. This yields slightly higher friction values than the dense-graded types, although the sharpness of the aggregate still is the major factor. However, the dense-graded type has a tendency to bleed and become glazed, and has the added disadvantage of poor light-reflecting qualities at night which make visibility poor.

It is important to note that open-grid steel bridge floors are dangerously low in friction coefficient when wet, although they have a high frictional factor when dry. He found also that tires made of synthetic rubber with a good tread have about 5% better frictional values than those made of natural rubber when on wet paved surfaces.

The greatest skidding hazard, he found, is encountered when braking a car equipped with smooth-tread tires with all wheels locked or sliding on a wet glazed asphalt surface. Friction values as low as 0.10 were encountered, indicating stopping distances five to six times longer than those encountered on dry asphalt surfaces.

The articles on this page represent the findings of studies made by Ralph A. Moyer, Research Engineer, and John Shupe, Research Assistant, at the Institute of Transportation and Traffic Engineering of the University of California, at Berkeley.



Avoid rounded aggregate. Use instead, angular aggregate and open-graded mix which increases friction value, and thereby build motoring safety into streets.

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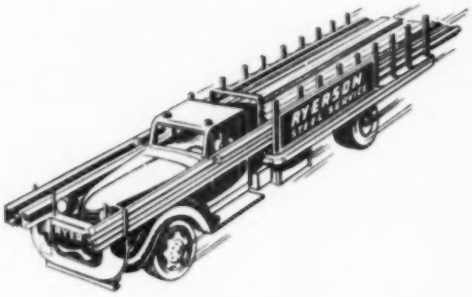

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Refuse Collection & Disposal

Should Apartment-House Incinerators Be Permitted?

YOU LOOK FROM the Empire City of New York to the extraordinary city of Los Angeles and you pick up evidence of the dirt and distress to the community that incinerators cause. In New York City, Rear Admiral W. S. Maxwell, Deputy Director of the Bureau of Smoke Control, places responsibility for approximately 30% of the total atmospheric pollution on apartment-house incinerators. Los Angeles, sensitive to the air pollution described by one of our language's new words, "smog," struggles with this problem, and finds the situation aggravated by little household incinerators that the housewives use to burn their trash at periods when the atmosphere is heavy and hangs low.

Admiral Maxwell has introduced a local law for consideration by the New York City Council that is interesting. (A copy of the law is reproduced here.) It is his considered opinion that this will do much to alleviate the nuisance caused by incinerators in a densely populated area.

Even with this law, one wonders whether it actually will relieve the problem. Note the difficulties that would crop up to hamstring it. For example, point "a" requires sufficient combustion space in the incinerator to "completely burn" the refuse. What does this mean? Even tin cans can be burned if the temperature is high enough.

Point "c" asks for a secondary combustion chamber with baffles that will allow settling out the fly ash. Here again, someone will have to spell out what adequate size means, and how much fly ash this chamber will have to remove.

Point "e" requires a screen filter, or other device to remove fly ash. Here again, one must know what the Bureau of Smoke Control has in mind when it speaks of fly ash. A lot of it is so minute that it is measured in microns. The visible pieces of charred paper that may be carried upward by the stack draft constitute only a portion of the fly ash.

The most important feature of any air-pollution regulation is the enforcement. Even if all these terms were met and if a haphazard operator burned the refuse in the incinerator, air pollution still would be a problem. These many incinerators are hard to police, and even a good furnace has trouble when operating continuously on a dependable fuel like coal or oil. What then can one expect of an incinerator that operates only occasionally on a wet, inconsistent, fuel like refuse?

All this seems to point clearly to the collection of the refuse and to its burning in a municipal incinerator where its disposal would be under the control of skilled operators and where the furnaces would have the benefit of efficiencies that small units never can attain. The development of the large portable containers, such as those made by Dempster Brothers, Inc., offer a cleaner, more foolproof method of disposal. The clearer appreciation of the cleanliness and sanitation that the kitchen grinder will provide in apartments for the immediate disposal of decayable kitchen waste will further alleviate the problem by removing nuisance-creating portions from the refuse.

Unless the incinerator manufacturers develop an unusually trouble-free unit for apartment use, cities may have to prohibit the troublesome apartment-house incinerator purely out of self-defense.

PROPOSED—The Council, City of New York—A LOCAL LAW

To Amend the Administrative Code of the City of New York in Relation to Design and Construction of Fuel-Fired Incinerators.

Be it enacted by the Council as follows:

Section 1. Subdivision c of Section C26-701.0 of chapter twenty-six of the administrative code of the City of New York is hereby amended by adding thereto a new subparagraph to follow subparagraph seven, and to be known as subparagraph eight to read as follows:

8. Incineration and refuse disposal. Effective January first, nineteen hundred fifty three the design of flue fed incinerators shall be provided with the following:

a. Primary combustion chamber with sufficient combustion volume to completely burn the refuse, depending upon the number of occupants and allowing three pounds of refuse per person per day.

b. Auxiliary heat shall be supplied in sufficient quantity to dry out the refuse, maintain the temperature of the products of combustion above the ignition point and create turbulence to aid in the mixing of the combustible matter, fumes and air to promote complete combustion of these.

c. A secondary combustion chamber with baffles which will change the direction of the flow of the gases, with passages designed and arranged so that the velocity of the gases is reduced to such an extent that settling out of fly ash will occur.

d. Control devices so that the fuel supply is shut off in the event of loss of, or lack of, ignition, to prevent explosion.

e. A screen, filter, or other device shall be provided to prevent passage of fly ash into the open atmosphere.

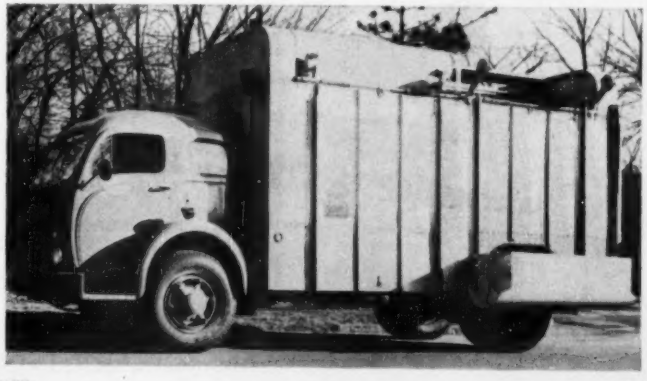
f. The present building code should be amended to require combustion space for incinerators to be constructed safely so as to withstand temperatures of 1800° to 2200° F., which may be attained due to the use of auxiliary fuel.

g. None of the above is to be interpreted as preventing the consideration of new equipment or devices which can meet the requirements as to smoke, odors, and fly ash emission.

h. A clause to the effect that nothing herein shall be construed to conflict with any of the underwriter's codes or other ordinances or regulations.

Brookline Trucks Hold 25 Cubic Yards

Brookline recently purchased three Quad-O-Matic loader trucks from Equipment Manufacturing, Inc., of Detroit. Fewer men are needed to lift the four waist-high buckets. Walter Devine, Town Engineer, has charge of the refuse service and selected the bodies.



Manila AGAIN PREFERS GAMEWELL

Manila, the capital city of the Philippines, first installed a Gamewell fire alarm system in 1903.

This system, from time to time extended with Gamewell equipment, was completely destroyed during the recent war.

After more than 40 years experience, Manila again purchased a complete fire alarm system consisting of a 38 circuit central station, 14 fire station alarm and recording equipments, and 600 fire alarm boxes. The new system has recently been placed in operation.

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Public Safety

New San Bernardino Fire Station

The new fire station designed by Architect Howard E. Jones.

By D. E. LITTLETON
Chief
Fire Department
San Bernardino, Calif.

THE NEW $265,000 central fire station, located in San Bernardino civic-center block, is a reinforced concrete, two-story, 92-by-97-foot building, harmonizing with the recently completed Hall of Justice, and was placed in service on January 15, 1952. The administrative offices of the department are located in the office section of the building. The second floor contains a 32-by-38-foot recreation room, a 16-bed dormitory, a kitchen, locker, study, and classrooms. A 40-foot hose tower is at the rear corner of the building.

The apparatus floor, 53 by 97 feet, without any obstructing supports on the floor, is served with six electrically operated Richards-Wilcox doors, three in front and three in the rear, controlled individually or by either of two master buttons which will open all six doors at an alarm. This building contains the headquarters' fire equipment which consists of two 750-gallon Seagrave triple-combination pumping engines, a 75-foot Seagrave aerial-ladder truck, a combination hose and deluge-gun wagon, a first-aid resuscitator ambulance, three chiefs' cars, and the fire-prevention and utility cars.

The San Bernardino Fire Department consists of six fire stations, 11 pieces of fire apparatus, three chiefs' cars, three other vehicles, and 99 personnel. All fire apparatus, chiefs' cars, and fire-prevention cars are equipped with three-way Motorola FM radios.

A completely equipped mechanical shop is provided for the maintenance and repair of the department motor equipment and buildings, under the supervision of the master mechanic.

The latest type of Gamewell fire-alarm switchboard and other central-alarm office equipment has been installed to replace the 1907 four-circuit Gamewell board which was outgrown and outmoded. The new board has provisions for 10 circuits, of which seven are now in use, because of the re-vamping of the outside circuits. The office has been planned for eventual expansion to 28 circuits. The alarm-office equipment includes a new Peerless (Gamewell) alarm transmitter and a Duplex recorder for recording radio calls during large or multiple fires. The office also includes the Fire Department's main radio transmitter and receiver, of Motorola construction. The Department operates on its own frequency, separate from the police frequency. We also use amplified voice transmission over our fire-alarm wire circuits to our fire stations for dispatching fire apparatus to fires and also for transmitting other routine business. The telephone system is the latest type and is known as "PABX" system. We can dial and call any telephone in the Department without contacting the alarm-office telephone switchboard. Also, we can place calls to the city exchange by dialing a certain number whereby we can complete calls to the outside. All telephones used for receipt of alarms are on a restricted basis, controlled by the alarm operator.

The alarm office, though attached to the building, is isolated from it by reinforced-concrete walls with no openings between the two. A separate entrance, provided with an electric lock, has been provided for the alarm office.

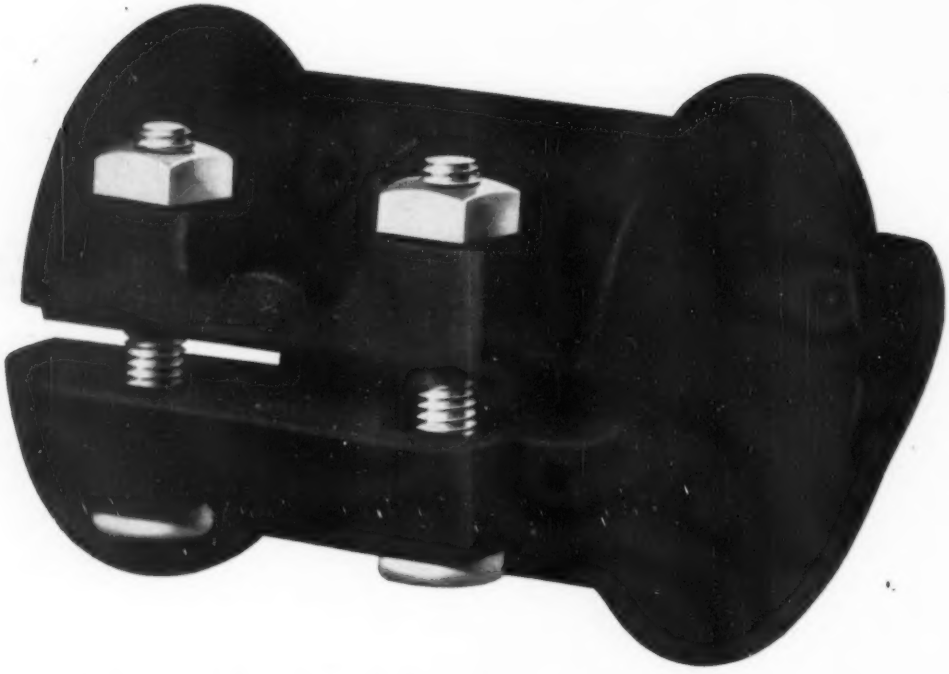
The architect was Howard E. Jones of San Bernardino; the contractor was E. F. Gladding.

A Navy in the Arkansas Valley

A NAVY in the Arkansas Valley is what the *Arkansas Valley Journal* called the two boats of the Rocky Ford, Colo., Fire Department's rescue squad. The two 14-foot boats, powered by Evinrude outboard motors, are mounted on trailers that can be attached to any car bumper so that any fireman can hook a boat to his car when a call comes for life-saving or recovering drowned persons in this section of Colorado. Since its organization in 1946, the rescue squad has recovered or assisted in recovering 19 bodies from John Martin and Olney Springs reservoirs, Holbrook, Meredith, Dyes, and Monument lakes.

CLYDE F. SUMMERS, *Chief*
Fire Department, Rocky Ford, Colo.

The two fire rescue boats and members of the Fire Department of Rocky Ford.



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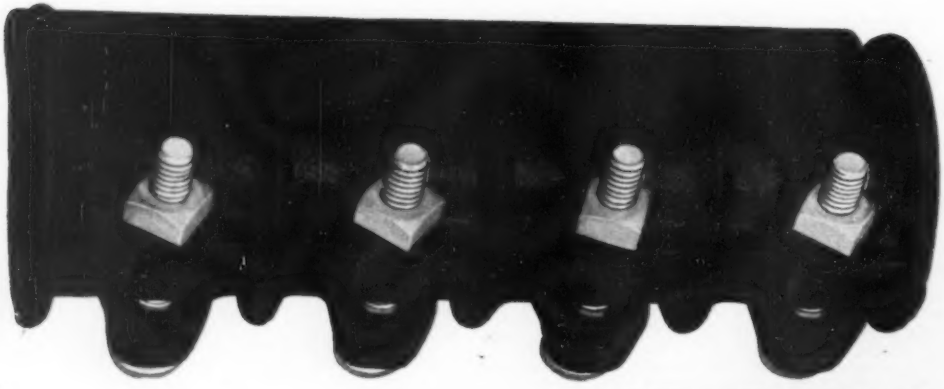

How the Smaller Cities Use Digester Gas for Power

IF DIGESTER GAS is to be used to generate power, the designer should allow at least 25 cubic feet of gas per kilowatt hour generated, according to Henry W. Taylor, New York City consulting engineer. As a rule, a plant will develop at least 1 cubic foot of gas per day per person served. However, A. B. Kozma, of Gannett Fleming Corddry and Carpenter, Inc., consulting engineers of Harrisburg, Pa., feels it wiser to measure gas production on the basis of 10 to 15 cubic feet generated per pound of volatile solids contributed.

Since the development of the dual-fuel engine, allowing either the use of digester gas or diesel fuel, the number of gas-engine installations in sewage-treatment plants has grown steadily.

Probably the smallest plant to use digester gas as a fuel for engines that produce plant power is the one at Winnemucca, Nev., serving 2,000 people. This plant, designed by Clyde C. Kennedy, San Francisco consulting engineer, uses a Buda gasoline-engine-generator set to generate the power. The engine is rated at 20 hp and powers a 12½-kva generator that operates pumps, flocculator, and lights. If the supply of gas is low, the engine can be operated on gasoline.

Probably the second smallest gas-engine installation is in Celina, Ohio (population 5,000). The plant here uses a 6-cylinder General Motors gasoline engine to furnish power for the aerator. The engine has safety controls that break the ignition if the temperature is too high or the oil pressure drops. The Celina plant was designed by Paul A. Uhlman and Associates of Columbus, Ohio.

The Muncie, Ind., plant uses sludge gas in a 90-hp Worthington engine to power a Roots-Connersville blower, pump, and to heat the digesters. It also has a 50-hp Climax gas engine that supplies power for the blower and pump. It uses heat exchangers from the engine exhaust to heat the digesters.

Des Moines gets power from its gas without having to generate it. Gas from the city's digesters is piped to the local electric utility which buys it at 2½ cents per therm during the warm months and 3 cents per therm during the rest of the year. In exchange, the plant purchased power from the same utility at a cost of 1 cent per kwhr. Paul Winfrey, Superintendent of Sewage Treatment, has reported that the plant produces 1½ cubic feet of gas per capita, translating its industrial load into equivalent population, or 10 to 11 cubic feet per pound of volatile solids. A somewhat similar arrangement is in use at Fort Dodge, Iowa, in which the utility buys the generated power and sells the power to the municipal utilities at the points where it is needed.

Another interesting use of digester gas is at Rocky Mount, N. C., a city that generates its own cooking gas. In this case, the sewage-plant digester gas is blended with the manufactured gas and used for household purposes. This is the only installation of its type in the country, so far as we know. The sewage plant is responsible for 10% of the total and its BTU value is about 800, in contrast to 500 from the city plant.

Multiple Uses

Few put the sewage-digester gas to more diversified uses than does Grand Rapids, Mich. Here the gas is used to heat two hot-water boilers that in turn heat buildings and digesters; it is used to dry sludge in a Louisville rotary dryer in the spring and fall; to heat the pumping station a half-mile from the plant; to heat the municipal building a half-mile farther away; to fuel a Buda gas engine used for compressing air employed in the plant, and to incinerate screenings. The plant produces roughly 225,000 cubic feet of gas per day while digesting 75,000,000 gallons of sludge per year, and 5,000 pounds of garbage solids.

At Galesburgh, Ill., the Sanitary District has installed a Climax gas engine connected directly to a Roots Connorsville blower. C. C. Larson, District Chemist, estimates the engine pays for itself every three years.

Corrosion Control

If the gas has a hydrogen sulphide content of 5 grains per 100 cubic feet, it ought to be treated to remove this sulphide content if it is to be a fuel in a gas engine. J. P. Burden, City Engineer of San Angelo, Texas, recommends the use of a filter containing iron shavings, such as the Connelly iron filter. This type of unit is used at Rocky Mount. Another method is to employ the "vapor phase" cooling system currently in use in certain plants in the West. This system allows the gas engine to operate at higher temperatures, and at these temperatures the hydrogen sulphide does not precipitate out and cause corrosion.

At the Georgia School of Technology, in Atlanta, tests showed the desirability of using digester gas from the sewage-treatment plant in trucks. The studies showed that 60 trucks operating at 3½ miles per gallon of gasoline costing 15 cents a gallon during 300 days of operation would require a fuel expenditure of $19,350. The annual cost to recover, clean, and compress sludge gas to be used in these same trucks would total $15,734. This study was made in 1942.

Power Breaks the Sludge Scum on Imhoff Tank

In this photograph, a workman in Gordon, Nebr., breaks sludge on the tank of the city's sewage-treatment plant. Since the installation of motors shown here, sludge-breaking time has been reduced to only several minutes.

AT THE TIME the council-manager plan was adopted in Gordon, Nebr., May 1950, one full-time employee was required to keep the Imhoff tank of the sewage-treatment plant in operation. Most of his time was spent in keeping the crust broken in the digestion chamber of the Imhoff tank.

The city had some old 3½-hp upright motors which were in good condition. An auger from a tractor-powered post-hole digger was hung from one of the motors mounted on a movable platform over the digestion chamber. By reversing the motor, the auger was used to force the sludge down into the water, chopping it into fine pieces at the same time. Breaking the sludge once or twice a day now takes 10 minutes and the full-time services of one man was eliminated. The cost of the installation was less than $50.

NEW CHRYSLER AIR RAID SIREN

Produces Loudest Sound for Defense Warning Systems

The Chrysler Air Raid Siren produces 138 decibels of sound 100 feet from the throat. It has a range of 8 miles. *It produces the loudest warning sound ever perfected for modern production.*

The Chrysler Siren is *independent* of vulnerable central power systems as it is powered by the new Chrysler 180 horsepower V-8 engine. This same power rotates the unit 360° every minute.

The Chrysler Air Raid Siren is now being installed in many principal cities throughout the country because it is the loudest, most foolproof, most economical warning siren on the market. (One city saved $100,000 by installing Chrysler Sirens.)

For complete information, specifications and availability for your city, town or industrial plant write: **Marine and Industrial Engine Division, Chrysler Corporation, 12202 E. Jefferson Ave., Detroit 31, Michigan.**

CHRYSLER
INDUSTRIAL ENGINES

Assures Correct Layout for Your Warning System

Chrysler Siren Technicians will help you plot your city map for correct coverage. Send us a geographical map of the area you need covered. We will plan your Siren Defense System for you! Write Siren Layout Service, Chrysler Corporation, 12300 E. Jefferson Ave., Detroit 31, Michigan.

Get What You Want—No Charge

Please check the list of interesting free catalogs on this and following pages. To obtain the literature you want, write direct to the manufacturers at the addresses given. If you prefer, you may circle the identifying numbers on this coupon and mail to THE AMERICAN CITY, *470 Fourth Ave., New York 16, N. Y., and we will see that catalogs are sent to you without expense or obligation.* 4/52

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Name ..... **Position** .....

Address .....

An Air-Operated Sump Pump

600 Flooded ditches, foundations, and basements will no longer cause difficulty for your repair crews if they have the new Cleco sump pump that operates through the standard air compressor. The sump pump is made to move 340 gpm against a 10-foot head or 124 gpm against a 70-foot head. Write for Bulletin P-849 from the Cleco Division of the Reed Roller Bit Co., 5125 Clinton Drive, Houston 20, Texas.

Concrete Vibrators

601 A circular is available from the White Mfg. Co., Elkhart 1, Ind., on its concrete vibrators which have dependable flexible drives, reliable vibrating heads, standard power units, and concrete grinders. All sections of the drive are interchangeable in multiples of 7 and 12-inch lengths. The heads are also interchangeable and can be applied to any drive section.

Diesel Pile Hammer

602 On request, the Syntron Co., 430 Lexington Ave., Homer City, Pa., will supply literature describing its Model No. 3000 diesel pile hammer which is self-contained and can be handled by a gasoline or diesel engine-driven crane or furnished complete with rig, leads, and hoisting engines, to drive sheet steel, timber, or concrete piling. The machine operates at 110 blows per minute. Its 1200-pound ram delivers 3,000 foot pounds per stroke.

Porcelain Framed Street Name Signs

603 The Municipal Street Sign Co., Inc., 777 Meeker Ave., Brooklyn 22, N. Y., reports that in observance of its 30th anniversary it has developed a radically new modern size street name sign utilizing weatherproof porcelain enameled frames. These new heavy gauge frames protect the large 6 by 30-inch porcelain sign plates and have a 15-year free-replacement guarantee. Both the wing and criss-cross style are in volume production and have been adopted as standard in Brooklyn, N. Y., Canton, Ohio, and other large cities.

Tapered Brackets For Street Lighting

604 On request, the Hubbard Aluminum Products Co., Division of Hubbard & Co., 6301 Butler St., Pittsburgh 1, Pa., will send literature describing the Hapco tapered style bracket for street lighting. This bracket is gracefully tapered from a 2½ by 5-inch oval at the pole end to 1¼-inch standard pipe size at the luminaire end. The high-strength aluminum alloy pole plate is welded to the arm to form a solid unit, and the Hubbard keyhole mounting slot makes one-man mounting easy.

All-Steel Swimming Pools

605 For economy and durability, quality and beauty, city planners and public officials are attracted by the all-steel swimming pools made by Koven Steel Swimming Pools, Inc., a Division of L. O. Koven & Bro., Inc., 154 Ogden Ave., Jersey City 7, N. J. Of welded steel construction, the equipment merely needs an occasional coat of paint to keep it in good condition. The company assumes all construction and installation responsibility, and helps you select the style, size, and shape steel pool best suited to your community's needs.

These Ball Valves Operate Against Full Water Pressure

606 Even when the water main is broken, these ball-type valves operate smoothly against a full head. They can be used for stop valves, altitude valves, automatic check valves, free discharge valves, pressure relief valves, pressure reducing valves, and emergency line check valves. Address your request for information to the Davis Mfg. Co., 321 Maple Drive, Beverly Hills, Calif.

Power Pipe Threading Machine

607 On request, The Toledo Pipe Threading Machine Co., 1445 Summit St., Toledo, Ohio, will send its new catalog reporting on its pipe tools, power pipe machines, and power drives. It states that its hand tools and power equipment speed the work and reduce costs. The Toledo Simpact is a self-contained 1 to 2-inch threader, and the No. 999, a 2-inch power-pipe threading machine.

Sewage Pumps

608 The Fairbanks-Morse Angleflow pumps move large volumes of sewage or storm water economically, according to Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill. Wide, unobstructed passages through impeller and volute make them suitable for handling debris-filled water. Sizes range from 8 to 54 inches, and capacities up to 80,000 gpm.

Desk-Top Equipment

609 Matched desk-top equipment is made by the Bert M. Morris Co., Dept. AC-3, 8651 W. Third St., Los Angeles 48, Calif. Among the products are pen sets, memo pads, letter and ash trays, and phone rests. The letter trays may be obtained in gray, bronze, walnut, mahogany, or in green. Two-point suspension permits quick, easy access from the entire front and both sides. Write for detailed information.

Reduce Refuse Collection Costs

610 According to Gar Wood Industries, Inc., Wayne Division, Wayne, Mich., the Gar Wood Load-Packers have reduced refuse collection costs for more than 1,600 cities, towns, and contractors. Among the equipment's features are completely enclosed body, low loading hopper, push button operation, faster loading, compression loading for maximum loads and fewer trips, fast, clean dumping, and reduced maintenance. Bulletin M60 reports on the Load-Packers. Also available are bulletins on dump bodies, elevating end-gates, and winches.

Dual Fuel Diesels

611 On request, the Engine Division of The National Supply Co., Springfield, Ohio, will supply bulletins on its dual fuel Superior and Atlas diesels. The company reports that power equipment, burning either diesel fuel or gas, is well adapted to use in sewage plants using digester gas or to installations where either natural gas or diesel fuel is available.

Fireproof Canvas

612 Municipal governments realize that Flamefoil canvas means safety for its citizens, reports the manufacturer, the Philadelphia Textile Finishers, Inc., Norristown, Pa. Made to meet Army, Navy, and Federal specifications, the canvas is used for awnings, tents, canopies, and is resistant to flame, water, weather, and mildew. Detailed information will be supplied by the company.

Ball-Type Backstop For Vertical Motors

613 A new method of preventing reversal of U. S. vertical hollowshaft motors has been developed by U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles 54, Calif. According to the manufacturer, by using balls, the geometric form most ideally suited to provide quick engagement and maximum strength, their designers have produced the U. S. Ballomatic, a backstop that depends on natural laws to give quick-acting, dependable service.

Control Relay Good for 40 Years

614 Modernization of old traffic-control equipment is easy and economical with Adlake relays made by The Adams & Westlake Co., 1125 N. Michigan, Elkhart, Ind. These are mercury-type relays employing mercury-to-mercury contacts, which eliminate the troublesome corroding and pitting of metal contacts. Other applications are in flasher service, indoor lighting controls, liquid level controls, and remote or automatic control. The No. 1140 Relay is hermetically sealed, silent, and chatterless, and makes or breaks 30 amperes easily, with low-operating current.

(Please turn to page 23 for more Literature)

WHY NOT LOAD THE CHEAPEST WAY?

BARBER-GREENE
MODEL
82-A
CRAWLER-MOUNTED
BUCKET LOADER

FIGURE
CONSIDER
COMPARE
AND SEE

your present loading cost . . .

wasted truck time . . . wasted man-hours . . . special operator . . .

the constant 3 cu. yd. per min. loading of the B-G 82-A . . .

the savings in man-hours and money possible on your loading jobs with a B-G 82-A Bucket Loader.

A B-G 82-A Bucket Loader is by all odds the cheapest and fastest method of loading free-flowing materials into trucks. Exhaustive cost analyses made throughout Barber-Greene's over 30 years' experience (during which B-G Loaders handled over a billion yards of material) have consistently proved this.

Simple controls mean that each driver can load his own truck . . . no need for an expensive operator. Each truck can be loaded to full capacity without spillage . . . without truck damage or undue truck wear.

Crawler-mounted, the 82-A provides positive traction in all kinds of going—on soft or muddy bases—on spots where pneumatic-tired rigs can't operate.

BARBER-GREENE COMPANY

AURORA, ILLINOIS, U. S. A.

Which Catalogs Interest You?

Write direct to the manufacturers or use the coupon on page 21

For Towing Cars, Handling Materials

615 It lifts and it hauls—the Ashton boom truck and wrecker. It tows illegally parked cars and brings in stalled cars and trucks. It also sets poles and lighting standards, curb and catch-basins, trees for the Park Department. It's an all-around puller, hauler, lifter and placer for municipal operating departments, with an extension boom that extends its abilities. Write for the illustrated folder: Ashton Power Wrecker Equipment Co., Inc., 1701 W. Lafayette Ave., Detroit 16, Mich.

Reflective Traffic Paint

616 Information on its line of Prismo products may be obtained from the Prismo Safety Corp., Huntingdon, Pa., ThePrismo Life Line is reflective traffic paint that has a special Prismo plastic binder holding the Prismo glass spheres in a vise-like grip, thus outwearing other traffic paints 3 to 5 times, reports the manufacturer. The Reflecto-Kit is a new brilliantly reflective sign finish in a wide range of colors available for street markers.

Portable Steel Bleachers, Grandstands

617 Catalogs and complete information will be sent by the Hussey Mfg. Co., Inc., 526 R. R. Ave., N. Berwick, Me., on its portable steel bleachers and grandstands, available in 6, 10, and 15-tier 12-foot sections. The company states that the seats can be used both indoors and outdoors, cannot collapse, and can be erected and taken down with ease and speed. Other products include water sports equipment, flag poles, and fire escapes.

Engineering Instruments

618 To aid engineers in the field in the use and adjustment of alidades, a new 28-page pocket-size service booklet has been published by W. & L. E. Gurley, Troy, N. Y., 107-year-old manufacturer of engineering instruments. It contains information for use of the alidade in exploration and map making, instructions on stadia surveying, and the use of the Beaman Stadia Arc. Write for a free copy of *Service Booklet C.*

Standby Power For Emergencies

619 On request, The Ready-Power Co., 11231 Freud Ave., Detroit 14, Mich., will supply information on its standby power units which operate on gasoline, natural gas, butane, propane, or diesel fuel. The company states that its equipment assures a continuation of vital electrical service even though normal power is discontinued.

Roller-Type Mowers

620 Available from the Cooper Mfg. Co., 454-456 S. First Ave., Marshalltown, Iowa, is literature on its 27 Imperial roller-type mower equipped with rubber covered steel roller and caster wheels. Powered with Briggs & Stratton motors, the equipment has new positive reel adjustment, new all-steel welded deck, and is heavily reinforced for added strength and rigidity. The 65-inch heavy-duty mower with triplex cutting units and riding attachment will easily maintain any lawn expanse up to 35 or 40 acres.

More Lift Capacity With Truck Crane

621 More lift capacity and less travel time are the claims of the Koehring Co., Milwaukee 16, Wis., in announcing that its 25-ton truck crane lifts 11.1 tons more than its crawler rating. Extra stability of truck mounting increasing boom length from 75 feet to a maximum 110 feet, with jib. The truck crane is readily converted to dragline, clamshell, pile driver, ¾-yard shovel, or hoe. Write for excavator catalogs or 20-page engineering handbook.

This Holder for Sewage Gas Has Unusual Characteristics

622 According to the General American Transportation Corp., 135 South LaSalle St., Chicago 90, Ill., the Wiggins gasholder is the only one that uses no water, tar, or grease. The holder is finding an increasing use for storing sewage plant digester gas. The manufacturer states that its equipment has dry, frictionless seal, is gas tight, and impermeable. Write for further information.

Self-Propelled Sidewalk Paver

623 Bulletin No. 52, issued by Dotmar Industries, Inc., 511 Hanselman Bldg., Kalamazoo, Mich., describes the firm's powered sidewalk paving machine. It states that the paver, working with transit-mix units, can readily lay up to 10 feet per minute of walk. By removing spacers or extensions, the machine can be narrowed down to pave curb and gutter, or integral curb, gutter, and walk.

Water Meters

624 The Hersey Mfg. Co., South Boston, Mass., produces water meters, which are dependable and have low-maintenance cost. On request, the 65-year-old company will supply complete information on its equipment, which ranges from the Giant Detector meter to the small domestic meter.

Police Badges

625 Police badges and seals of nickel, rhodium, gold plate, and gold filled materials, are made by V. H. Blackinton & Co., Inc., Attleboro Falls, Mass. The company reports that its custom design department will be glad to submit rough sketches for your inspection without charge. All Blackinton badges are triple plated, emblems or state seals may be interchanged, and all breast badges may be furnished with safety catches.

For Street Construction

626 A wider use of local aggregates, ability of street crews to work despite inclement weather, and more working days in each paving season, are the advantages that the Construction Specialties Division, Dewey and Almy Chemical Co., Cambridge 40, Mass., states you can get when using its Darakote Anti-Stripping Additive which displaces water when added to the asphalt mix. It prevents stripping both during and after construction, and extends service life and durability of the pavement. Write for factual brochure.

Rodent-Proof Rubbish Containers

627 With rat-proof, scavenger-proof Dempster-Dumpster rubbish collection trucks, municipalities eliminate rats at accumulation points, states Dempster Brothers, 832 Dempster Bldg., Knoxville 17, Tenn. The equipment keeps rubbish completely out of sight at all times. One truck-mounted Dempster-Dumpster, with only one man, the driver, can pick up, haul, and empty a multiple number of these big containers.

Heavy-Duty Diesels From 10 to 10,000 hp

628 Heavy-duty diesel engines from 10 to 10,000 hp are made by the Nordberg Mfg. Co., Milwaukee 7, Wis. In the line of two and four-cycle oil-burning and Duafuel diesels and gas burning engines you will find the right size and type of unit to meet your power requirements. Write for detailed information.

Utility Billing

629 The Underwood Sund-strand for utility billing has a 10-key keyboard and the touch system which permits regular personnel to turn out more work with less effort and with proved accuracy, reports the Underwood Corp., One Park Ave., New York 16, N. Y. Complete particulars will be furnished by the manufacturer.

Street-Cleaning Can Carrier

630 Street cleaning departments of many large and small municipalities use the White Wing can carrier, reports the Wirt & Knox Mfg. Co., Sedgley Ave., York & 23rd Sts., Philadelphia 32, Pa. Among its features are all-steel welded construction, solid rubber tires, lift-type hook to accommodate cans from 23 to 26 inches high, and handle at right height for the most comfortable position for pushing.

Investment Banking Service

631 Drexel & Co., investment bankers, 1500 Walnut St., Philadelphia 1, Pa., and 14 Wall St., New York 5, N. Y., advise on the development of programs for revenue or direct obligation financing, and undertake the marketing of bond issues. In creating a sound financial program for communities, the firm supervises all details of issuance, working in conjunction with legal counsel, and where necessary, with engineers or architects.

Three-Wheel Motorcycle Has Varied Usage

632 The Indian Patrol, manufactured by Indian, Dept. AC, Springfield, Mass., is used for parking meter collection, heavy-traffic duty, and emergency work. Compact and maneuverable, its rear seat accommodates two additional men, and its 6-cubic-foot compartment beneath seat provides ample storage space. The equipment is employed by police, fire, and other municipal departments. For literature, write to Indian, Dept. AC., Springfield, Mass.

Bond Maturities

633 On request, Halsey, Stuart & Co., Inc., 123 S. LaSalle St., Chicago 90, and 35 Wall St., New York 5, N. Y., will send its latest offering list on its bond maturities. The company reports that the municipal administrator may buy bonds to mature in certain years when peak pension payments are anticipated, or he may space his bond maturities to take advantage of market changes that in turn allow gainful reinvestment of the maturing principal.

Dig, Backfill, Load, Cut Pavement with One Machine

634 You will have to search hard to find a machine that will do more tasks for a municipality than the Le Roi Tractair. This small tractor-compressor can trench a 7-foot ditch. It can operate a compressor that will make your pavement service cuts. It has a front-end loader bucket and a back-filling bulldozer blade. For details, write to the Le Roi Co., Milwaukee 14, Wis.

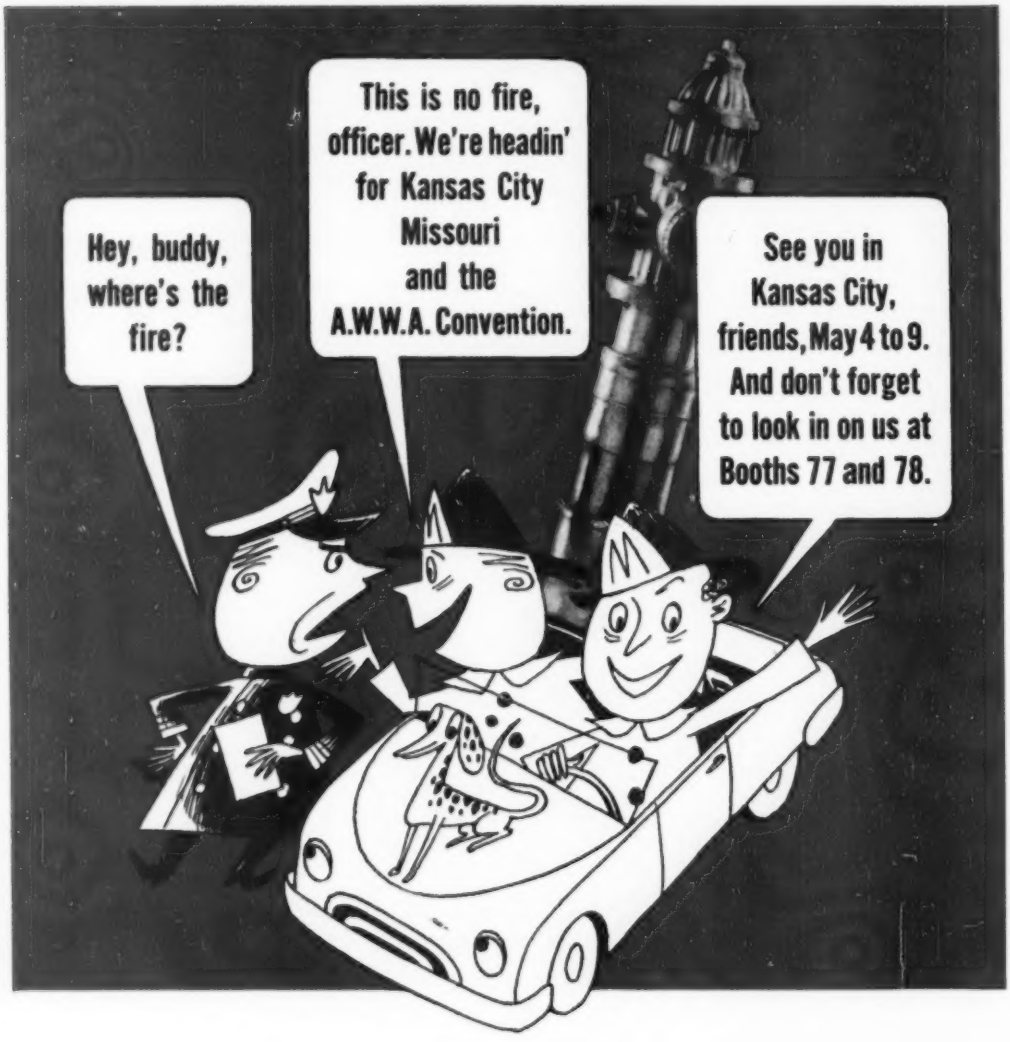
Fire Alarm Systems

635 On request on your city's letterhead, the B & B Engrg. Corp., P. O. Box 31, Norwood, La., will send a copy of its 100-page book on installing a new fire alarm system or expanding or modernizing the existing system. The publication contains the "Standards of the National Board of Fire Underwriters for the Installation, Maintenance, and Use of Municipal Fire-Alarm Systems," with the official rules applying to cable, circuits, boxes, station equipment, and tests.

Street Lamp Transformers

636 Bulletin 521-5, issued by the Jefferson Electric Co., Bellwood, Ill., reports on the new revised line of Jefferson mercury lamp transformers. Three primary taps are provided for a close match with line voltage; hot-dipped galvanized deep-drawn steel cases give lifetime protection against the most severe weather, and leads cannot be pulled loose as they are securely stapled to the coil.

(Please turn to page 24 for more Bulletins)


Hey, buddy, where's the fire?
This is no fire, officer. We're headin' for Kansas City Missouri and the A.W.W.A. Convention.
See you in Kansas City, friends, May 4 to 9. And don't forget to look in on us at Booths 77 and 78.

MATHEWS HYDRANTS

Made by R. D. Wood Company

Public Ledger Building, Independence Square
Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

Obtain this Literature Free of Charge!

Write direct to the manufacturers or use the coupon on page 21

Insurance Appraisals Of Public Properties

637 The J. M. Cleminshaw Co., Union Commerce Bldg., Cleveland, Ohio, provides insurance appraisals for public properties of all kinds, including schools, hospitals, and municipal buildings. The concern recommends its abridged form appraisal developed over a period of 28 years, which it states is economical and accurate. Write for complete information.

Street Repair Equipment

638 Issued by the Aeroil Products Co., Inc., South Hackensack, N. J., Catalog No. 500Y reports on oil and gas burning, and electrically heated portable industrial equipment. Included in the publication are asphalt heating and melting kettles, cut-back and emulsion power spraying units, flame guns, spraying equipment for asphalts, road oils, and degreasing tanks and specially designed tanks of all types. Aeroil's Auto-Steam vapor steam cleaner can be employed for every cleaning job.

Water-Works Gate Valves

639 The Mueller Co., Chattanooga, Tenn., manufactures gate valves for the water-works field that merit special attention. Heavy lugs and bronze pins hold the unit gate assembly together; precision-machined sealing parts make the equipment leakproof; discs are permanently aligned and protect seats, and the products are easy to operate and repack. Write for complete information.

Emergency Electric Power

640 Onan electric plants supply standby electric power for Civilian Defense Corps. Available from D. W. Onan & Sons, Inc., 7647 University Ave., Minneapolis 14, Minn., is a folder on its portable, mobile, and stationary equipment. The electric plants are self-contained units, mounted on trucks or trailers. They also can be employed for police and fire radio, emergency feeding centers, air raid shelters, sewer and water systems, and floodlighting disaster areas.

For Preparing Poll Lists

641 Write for a copy of KD-499 from the Management Controls Reference Library, Remington Rand, Inc., Room 1750, 315 Fourth Ave., New York 10, N. Y. This publication reports on the Flexoprint Panels for maintaining lists of registered voters. Typewritten die-cut cards are filed alphabetically or by street number on district precinct panels. They are instantly ready for photographing and fast, low-cost reproduction by photolith process.

Protect Community With Good Lighting

642 A well-protected community has an effective lighting system. According to the Revere Electric Mfg. Co., 6015 Broadway, Chicago 40, Ill., its equipment cuts down night traffic accidents and saves lives. White-Way Pylon Lites are for boulevards and business districts. Among the Revere products are single and double-arm one-piece poles, luminaires for mercury or incandescent lamps, and floodlights and searchlights.

Protect Shade Trees From Insect Pests

643 The John Bean Rotomist protects shade trees and parks from insect pests. According to the John Bean Division of the Food Machinery & Chemical Corp., the machine delivers atomized spray concentrate of the correct micron size, but at relatively low air velocities so that there is no damage to trees. The company also produces the John Bean Ranger, an all-purpose municipal sprayer for weed, insect, brush, and pest control. For further information, write to the manufacturer's Dept. AC3, Lansing 4, Mich.

Tar Base Coatings

644 For protecting industrial structures and equipment from corrosion, employ Pitt Chem quality-controlled tar base coatings, states the Pittsburgh Coke & Chemical Co., Protective Coatings Division, Grant Bldg., Pittsburgh 19, Pa. According to the company, the coatings are easy to apply, low in cost, and are effective against a wide variety of chemical and atmospheric corrosive conditions above and below ground. Available are Pitt Chem 101, versatile, heavy-duty coating which withstands severest corrosive conditions; 102, thin, high gloss maintenance coating for steel and concrete surfaces; 103, heavy duty coating for metal exposed to corroeive vapors, dilute acids, and alkalis, and Pitt Chem 104, a fast drying, high gloss coating for equipment handling potable water.

Power Lawn Mower

645 The Pearce Corp., 144 E. Highland Ave., Milwaukee 2, Wis., on request will send literature reporting on its Air-Lift power mowers for every purpose. Available are: Model M with 31-inch cut; Model B, 25-inch cut, and Model PL, 20-inch cut. The air-lift suction principle raises down-grass, always lifts all grass up to full height and ready for fast, even cutting, once across. The equipment cuts all stem growth off at grass level, cuts grass or weeds of any height or texture, and multi-slashes grass clippings into mulch.

Winch Has Fourfold Job

646 The Hyster winch, mounted on a Caterpillar diesel tractor has a fourfold job: it moves heavy equipment; rescues mud-bogged equipment; insures against work stoppage or down-time on any project using equipment, and pulls the tractor itself out of mud or other situations that have immobilized the unit. Illustrated printed matter may be secured from The Hyster Co., 2902-61 N.E. Clackamas, Portland 8, Ore.

Bituminous Mix Plant

647 On request, the Kwik-Mix Co., Port Washington, Wis., will supply literature describing its one-man bituminous mix plant in 10 and 14-cubic foot sizes, readily adaptable as stationary overhead plants. Among the features are pug-mill mixing action, uniform oil distribution, accurate temperature control, and non-tilting drum.

Gas-Diesel, Diesel Engines

648 If you need economical, dependable power for water pumping, for sewage lift stations, or for generating electricity in municipal electric plants, write to The Cooper-Bessemer Corp., Mount Vernon, Ohio, for literature on straight diesel and gas-diesel types of engines.

Street Markers

649 Miro-Flex street markers are made of zinc-coated Bonderized steel, embossed, and finished with the best baked on enamel, reports The Miro-Flex Co., Inc., 1824 E. Second St., Wichita, Kans. This new deluxe, four-way pedestal assembly with block numbers is easily read, and built to last for years.

Small Asphalt Distributor For Street Maintenance

650 Littleford's Model 101 utility spray tank for street maintenance can do small application work with its 10-foot spray-bar, patch work with its hand spray attachment, and crack filling with its pouring pot outlet. According to Littleford Bros., Inc., 500 E. Pearl St., Cincinnati 2, Ohio, the spray tank for asphalt, tar, or emulsion spraying cuts labor costs and operating time.

Steel Strapping Attachment For Street Signs

651 Steel strapping for attaching street signs is made by A. J. Gerrard & Co., 1952 Hawthorne Drive, Melrose Park, Chicago, Ill. Available are stainless steel for permanent mounting, and galvanized steel for semi-permanent mounting, as well as complete accessories in both metals.

Folding Tables

652 The Monroe Co., Inc., Colfax, Iowa, on request will send a copy of its *Institutional Catalog No. 225* on its folding tables which, it claims, are designed to carry a ton, last a lifetime, are light in weight, useful, practical, and modern. Available are tables for community recreation, kindergarten classes, hotels, clubs, lodges, and churches. The company also produces folding chairs, steel trucks for folding banquet tables and folding chairs, and steel frames for picnic tables.

Front-Mounted Pump For Fire Apparatus

653 Bulletin 8330, issued by American-Marsh Pumps, Inc., Battle Creek, Mich., describes the Barton-American UA front-mounted pump for fire apparatus. According to the company, the pump is gear-driven, frost-proof, positive priming, and one can use a larger booster tank on a standard truck chassis, getting closer to the water supply and refilling the booster tank quickly at 600 gpm.

Efficient Traffic Signals

654 According to Southern Signals, Inc., 222 Beach St., Box 1303, Shreveport, La., its traffic signals are efficient in design, construction, and operation. The Autoflow line includes the four-way fixed face beacon (Type F14SW); 102S control single timer, six circuit and four-way fixed face three-section traffic signal (Type F34SW). Write for descriptive literature.

For Economy, Use This Bucket Loader

655 The Barber-Greene bucket-loader, Model 543, saves manpower, truck time, and money, for it loads all free-flowing materials at three yards per minute. The new hydraulically controlled trimmer-conveyor, made by the Barber-Greene Co., Aurora, Ill., combines the spiral feed, cleanup scraper, automatic overload release, and floating boom. Built for high production for long low-cost service, it also is convertible to a snow loader.

Seals for Municipal and Water-Works Usage

656 Seals made by The United Seal Co., 450 S. Pearl St., Columbus 15, Ohio, are designed for all municipal and water-works uses. Available are all size leads for water or wire seals for water, electric, and parking meters, fire extinguishers, cash boxes, governors, and carburetors. Wire may be had in copper, galvanized, and steel, either cut to standard lengths or in spools or coils.

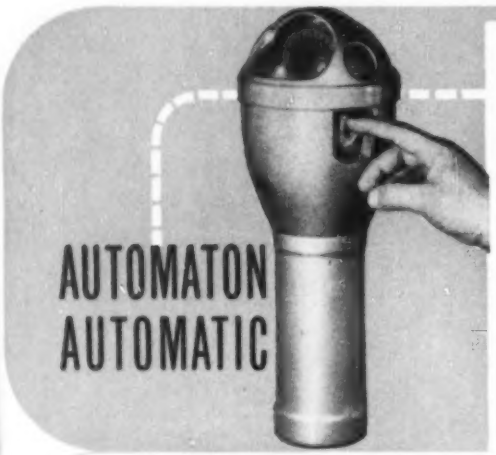
For Street, Safety, And Parking Lines

657 The Florline, produced by the H. C. Sweet Co., 12063 Wooddbine Ave., Detroit 28, Mich., efficiently makes street, safety, and parking lines at walking speed, reports the manufacturer. No attachments are needed for this one-man, one-hand operation which is gravity fed, and makes curved, straight, continuous, or skip lines, 2, 3, or 4 inches wide with interchangeable carriages. For folder write the company's Dept. MB.

(Please turn to page 28 for more Literature)

. . . of a series of talked-about features which progressive city officials look for and find in today's

No. 1 most talked-about and most-often bought meters

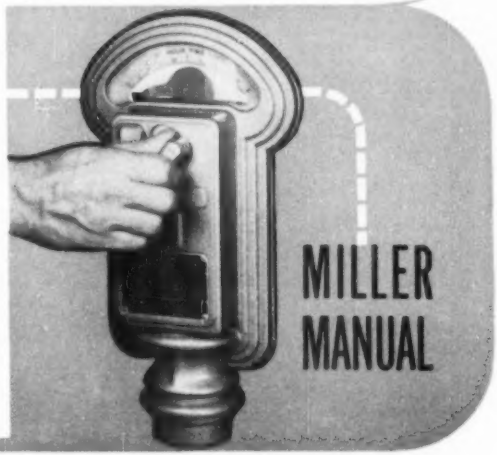


talked-about because its 100% AUTOMATIC. When we say "100% automatic", we mean exactly that—because AUTOMATON is completely free of all uncertainty and dependence on a city-paid "winder-upper" to make it automatic. The simple, easy, one-motion insertion of a coin (as easy and automatic as pushing an electric switch button) is all that's needed to activate AUTOMATON. • This "no-winding-expense" saving of AUTOMATON'S fully automatic operation is the city's to enjoy year after year, amounting to thousands of dollars during the life of the meter. • Cycle-tone signal bell inside of mechanism lets you know when the meter is completely energized.

Write for full details

talked-about because of its WIPE-OFF TIME FEATURE. Here beyond doubt, is the most efficient safe-guard yet devised against border-line violation by a parker. This latest improvement (now standard in every MILLER) wipes-off all unexpired time from previous parker. When new user inserts coin and begins operation of meter, the time indicator returns to zero—and only after operation is completed, does proper time for the newly inserted coin, PLUS any unexpired time then register on dial. This highly desirable safeguard guarantees the meter will never "gyp" the parker, and the parker positively cannot "gyp" the city.

Write for full details



also . . . *These two great meters offer many more features*

AUTOMATON. One-hand touch-action operation . . . Gyp-proof slug detector and ejector . . . Out-of-order trouble flag . . . Easy-access screw-on top . . . One-unit lift-out mechanism. Under-cover protection of rate and instruction plates . . . Coin-gate block . . . Patented collection system.

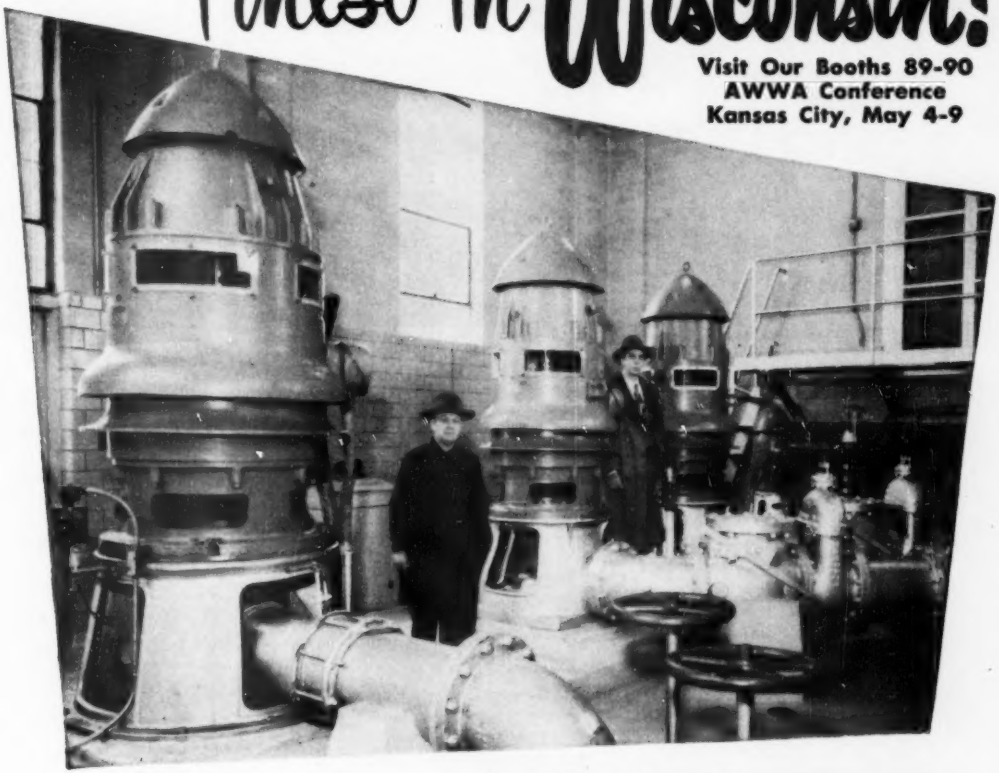
MILLER. Street and parking lot adaptability of time, rates, and coins . . . Easy patrolling double-flag facility . . . Out-of-order coin-slot closer . . . Double lock protected coin box . . . No-jam coin carrier . . . Weather-tight dependability in any climate . . . Long life durability.

DUNCAN PARKING METER CO.

ONE OF THE

Finest In* Wisconsin!

Visit Our Booths 89-90
AWWA Conference
Kansas City, May 4-9



Layne now offers two new folders which fully describe the Layne Oil and Layne water lubricated pumps. Copies will be sent on request. No obligation.

for the city of wauwatosa

*

Layne points with pride to a recent deep well and a four vertical turbine pump installation for the city of Wauwatosa, Wisconsin. From an overall capacity, control flexibility, high efficiency, smoothness of operation and modern engineering, this is one of the very finest water supply plants in the state. The 1750 foot deep well, cement grouted from top to bottom, produces 1650 gallons of water per minute against a dynamic head of 145 feet. All water for the city of Wauwatosa is 100 percent from Layne pumps.

This installation is typical of Layne's all inclusive services. Everything from the original test borings to the well drilling, sand screen and pumps and motors, was handled complete by Layne's own crews operating under the direct supervision of Layne engineers. It is such splendid services and outstanding results that Layne and Layne alone in the Nation, is in a position to offer cities, factories, mills and plants of all kinds, whether the need is for a single unit or for many.

For late catalogs, bulletins etc., address

LAYNE & BOWLER, INC.
GENERAL OFFICES, MEMPHIS 8, TENN.

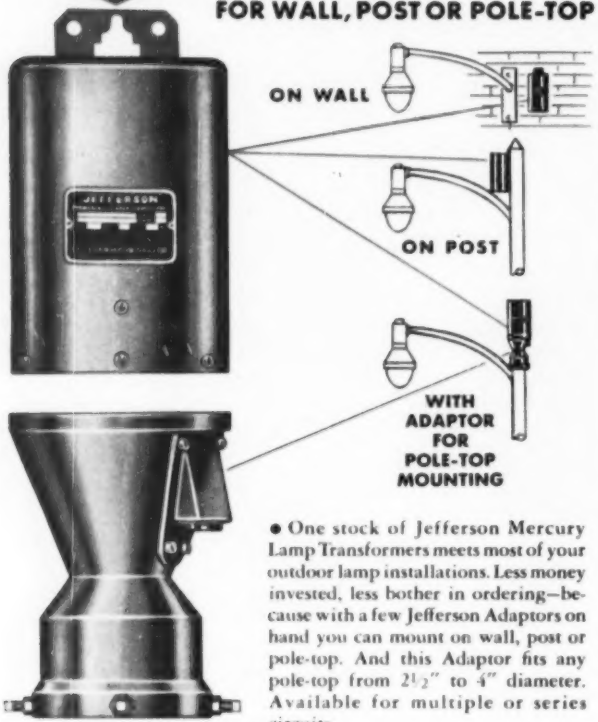
Layne

WATER WELLS
VERTICAL TURBINE PUMPS
WATER TREATMENT

UNIVERSAL MOUNTING

ONE JEFFERSON TRANSFORMER

FOR WALL, POST OR POLE-TOP



• One stock of Jefferson Mercury Lamp Transformers meets most of your outdoor lamp installations. Less money invested, less bother in ordering—because with a few Jefferson Adaptors on hand you can mount on wall, post or pole-top. And this Adaptor fits any pole-top from 2½" to 4" diameter. Available for multiple or series circuits.

Single Piece Drawn Steel Case

Compact drawn steel case sheds water like a duck. Besides being hot-dipped galvanized, they have the new "Dur-A-Gray" weatherproof finish—not just weather-resisting.

Attractive Gray Color

The color is a rich gray that harmonizes with other equipment or any background. Write today for Bulletin 521-5 containing all necessary data for correct transformer selection.

JEFFERSON ELECTRIC COMPANY
Bellwood, Illinois

JEFFERSON ELECTRIC

JEFFERSON
MERCURY LAMP
TRANSFORMERS

More Literature

Write direct to the manufacturers, or use coupon on page 21

Weed Killers

658 Descriptive literature on its weed killers may be obtained from The C. B. Dolge Co., Westport, Conn. The company states its products go to the root of weed problems. Where no vegetation whatever is desired, use the Dolge SS Weed-Killer. The E. W. T. Selective Weed-Killer (2-4-D) kills obnoxious plants, but does not injure most turf grasses.

All-Purpose Refuse Loader

659 Produced by the City Tank Corp., 53-09 97th Place, Corona, L. I., N. Y., the Roto-Pac is an all-purpose refuse loader. According to the concern, it operates under lowest oil pressure, packs without extra motor operation, saves gas, wear on motor, and money in operation. For details on this automatic and continuous loading and packing machine, write the manufacturer.

Dual-Fuel Engines

660 On request, the Lima-Hamilton Division of Baldwin-Lima-Hamilton Corp., Hamilton, Ohio, will furnish details on its dual-fuel engines which may be obtained for any job in the slow and medium speed range from 550 to 6860 hp. It states that 40% more air is trapped in the cylinder because of the rotary valve design, an annular wall chamber, proportioned porting, and a semi-hemispherical combustion chamber.

Twice as Much Light With Mercury Vapor Lamps

661 According to the Amplex Corp., Dept. K-3, 111 Water St., Brooklyn 1, N. Y., Amplex mercury vapor lamps for street lighting give twice the light for the same wattage consumed as do incandescents, and have several times the burning life of ordinary lamps. Models available are AH-1, approximately 16,000 lumens, and EH-1, approximately 20,000 lumens.

Dump-Truck Equipment

662 The Heil Co., Dept. 4332, 3043 W. Montana St., Milwaukee 1, Wis., announces its latest bulletins on its dump truck equipment, among which are the Heiliner, 2-wheel tractor and scraper. Heil dozers and scrapers, and Heil platform conversion hoist. According to the company, Heil no-sag construction assures long body-life, and fast, clean dumping.

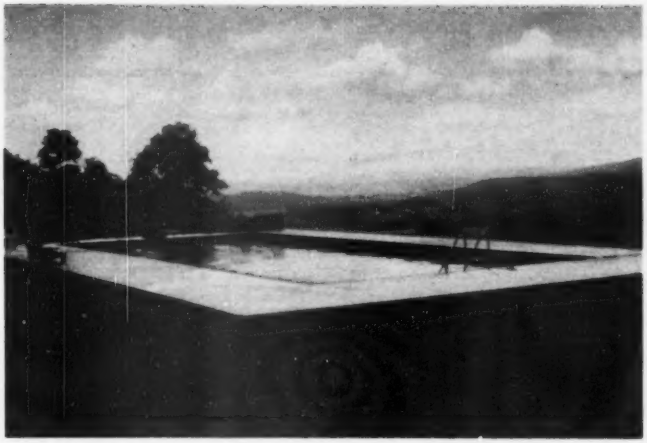
Measures Flow Rates Of Liquids, Gases

663 A new catalog, describing the use of Rotameters for indicating, recording, and totalizing flow rates of liquids and gases, is available from the Brooks Rotameter Co., Box 432-AC, Lansdale, Pa. Catalog No. 110 reports on this instrument which can be used for measuring the flow rates of ozone, chlorine, and ammonia for water treatment and purification, and also for general flow rate metering in pilot plant studies.

Story of American Cast Iron Pipe Foundry

664 *A Picture Trip Through "ACIPCO,"* the American Cast Iron Pipe Co., Birmingham, Ala., is the title of a booklet prepared by the organization. The publication shows the "high spots" of the Acipco plant and organization, its executive background, manufacturing facilities, and the various service features. Mono-Cast is the trade name for Acipco pipe, centrifugally cast in a sand-lined metal flask. The centrifugal pipe is cast in sizes from 3 to 48 inches; sizes from 3 to 12 inches are made in No. 1 Mono-Cast Shop, and sizes 14 to 48 inches in the No. 2 Mono-Cast Shop.

(See page 30 for more Bulletins)



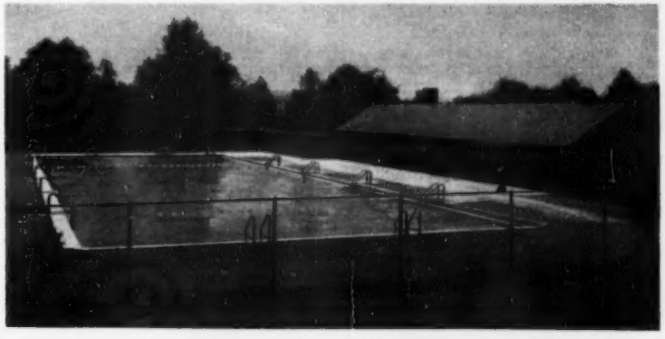
City planners choose

ALL STEEL SWIMMING POOLS by Koven

for low cost—

low upkeep—

and lasting service



Public officials who must balance the budget with one hand and plan for both present and future citizens with the other — choose All Steel Swimming Pools by KOVEN for economy and durability — quality and beauty.

Yes—KOVEN Steel Pools—designed for decades of service — are the only leak-proof type built — and more — they are immune to weaknesses found in other pools because of their welded steel construction. This explains their long, trouble-free life — their low cost and amazingly low upkeep. For example, a mere occasional coat of paint keeps them fit. Another boon to the city budget is that KOVEN, with over 70 years of steel fabricating know-how, assumes all construction and installation responsibility and helps you select the style, size and shape steel pool best suited to your community's needs. Call or write for literature or for a KOVEN Representative. No obligation.

KOVEN STEEL SWIMMING POOLS, INC.

A Division of L. O. KOVEN & BRO., INC.
154 Ogden Ave., Jersey City 7, N.J.
PLANTS: Jersey City, N. J. • Dover, N. J.

Catalogs for You

Write direct to the manufacturers or use coupon on page 21

Adjustable Valve and Extension Service Boxes

665 To solve special problems in the water and gas fields, the Buffalo Pipe & Foundry Corp., Box 55, Station B, Buffalo 7, N. Y., manufactures adjustable valve boxes and extension service boxes. Write for circular reporting on the equipment, which includes the 3-piece screw type valve box designed for modern-day street traffic, and the 2-piece, extra heavy, sliding type, valve box, designed to cover the stuffing box of valves up to 10 inches in size.

Directional Beam Siren

666 The Thunderbolt is a directional beam siren which rotates through full 360 degrees and is supercharged for superior penetration and range, according to Federal Enterprises, Inc., 8756 S. State St., Chicago 19, Ill. Mechanically and electrically simple, the equipment has controllable rotation and pitch. Write for a copy of the *Thunderbolt Bulletin*.

More Miles Per Brush With Street Sweeper Wire

667 "More miles per brush" is the claim of the Johnson Steel & Wire Co., Inc., Worcester 1, Mass., manufacturer of the Roadmaster street sweeper wire which has a high sclerescope rating and uniform temper. It is specially processed for high fatigue against breakage. For descriptive literature, write to the manufacturer.

Converts from Crane To Drag-Shovel

668 According to the Bucyrus-Erie Hydrocrane Division, South Milwaukee, Wis., the Hydrocrane can be quickly converted to the Hydrohoe in less than four hours. The Hydrocrane has among its features, a boom, hoist, swing, outrigger set and retract, and is available with crane, hook, magnet, grapple, and catch-basin cleaning and material handling buckets. The Hydrohoe provides two separate digging actions, by means of a hydraulic ram and by telescoping boom. Cable permits digging a level scallop-free trench.

Spraying Equipment

669 A new chart, embodying the latest information on chemical control of weeds and brush, has been prepared by the Thompson Chemicals Corp., St. Louis 3, Mo. The chart furnishes information on what to spray, when to spray, what dilution to use, and includes directions for both foliage spray and basal bark treatment.

Direct-Seal Luminaires

670 Joslyn Direct-Seal luminaires are made by the Joslyn Mfg. and Supply Co., 20 N. Wacker Drive, Chicago 6, Ill. The company states that its equipment gives efficient high illumination, electrical durability, is permanent and rugged, convenient to operate, and eliminates troublesome gaskets.

Aluminum Street Markers

671 An illustrated catalog may be obtained from the Lake Shore Markers Division, Lake Shore Pattern Works, 654 W. 19th St., Erie, Pa., describing the Lifetime aluminum markers. According to the manufacturer, its equipment is rustproof, durable, attractive, and affords day and night visibility.

A New Idea In Waste Receptacles

672 The new sidewalk waste receptacles, being offered by the Sydell Mfg. Co., Inc., 429 S. Tryon St., Charlotte, N. C., are built to provide greater convenience to the public and to be serviced more easily by the city sanitation crews. These receptacles, of 20-gauge steel, can be securely fastened to post, tree, or wall, and are emptied conveniently by a door in the bottom. A new folder gives complete details on their construction.

Installs Underground Pipe Without Trenching

673 Avoid time waste by employing the Hydrauger to install underground pipe, states the Hydrauger Corp., Ltd., 681 Market St., San Francisco, Calif. The earth-boring tool can be used on pipe runs under streets, highways, pavement, and gardens. It avoids trenching, backfill, and pavement cutting. Write for a copy of the Hydrauger booklet.

Solve Parking Problems with Meters

674 Municipalities often can solve their parking problems by installing meters. A leading manufacturer of such equipment is Mi-Co Meters, 235 Court St., Covington, Ky., which state that its machines give dependable operation, with unusually low upkeep, and high earnings. The Mi-Co parking meter is manually operated, while the Mi-Co Twin is automatic.

Reflective Sheeting For Traffic Signs

675 Improve the safety of your streets and highways with signs you can see day and night under all weather conditions by making your own reflectorized signs of Scotchlite Flat-Top sheeting applied with the Scotchlite Vacuum Applicator. According to the Minnesota Mining & Mfg. Co., Dept AC-32, St. Paul 6, Minn., crews easily turn out as many as 30 reflectorized signs per hour at less cost. Write for information on the 1952 *Special Traffic Package*, making equipment and material available at real savings, and ask for a free copy of the *Sign Sense* booklet.

(See page 34 for more Bulletins)

MOBIL-SWEEPER

Better Sweeping for your money!

The big Mobil-Sweeper with its 2½ cu. yd. dirt hopper cleans more pavement . . . cleans it faster with fewer stops. It sweeps up and down steepest hills, around sharp corners. Cleans gutters slick as a whistle. The full-floating, self-aligning rear broom sweeps clean in deepest dips.

Whether you plan regular street sweeping or freeways and airports, too, you can get dual control, two gutter broom sweepers or the conventional sweeper to fit your needs. Mobil-Sweeper is the safest sweeper built. Four-wheel hydraulic brakes, steel-top cab, shatterproof windshield are all standard equipment. Protect your drivers and get cleaner streets with Mobil-Sweeper. Write today!

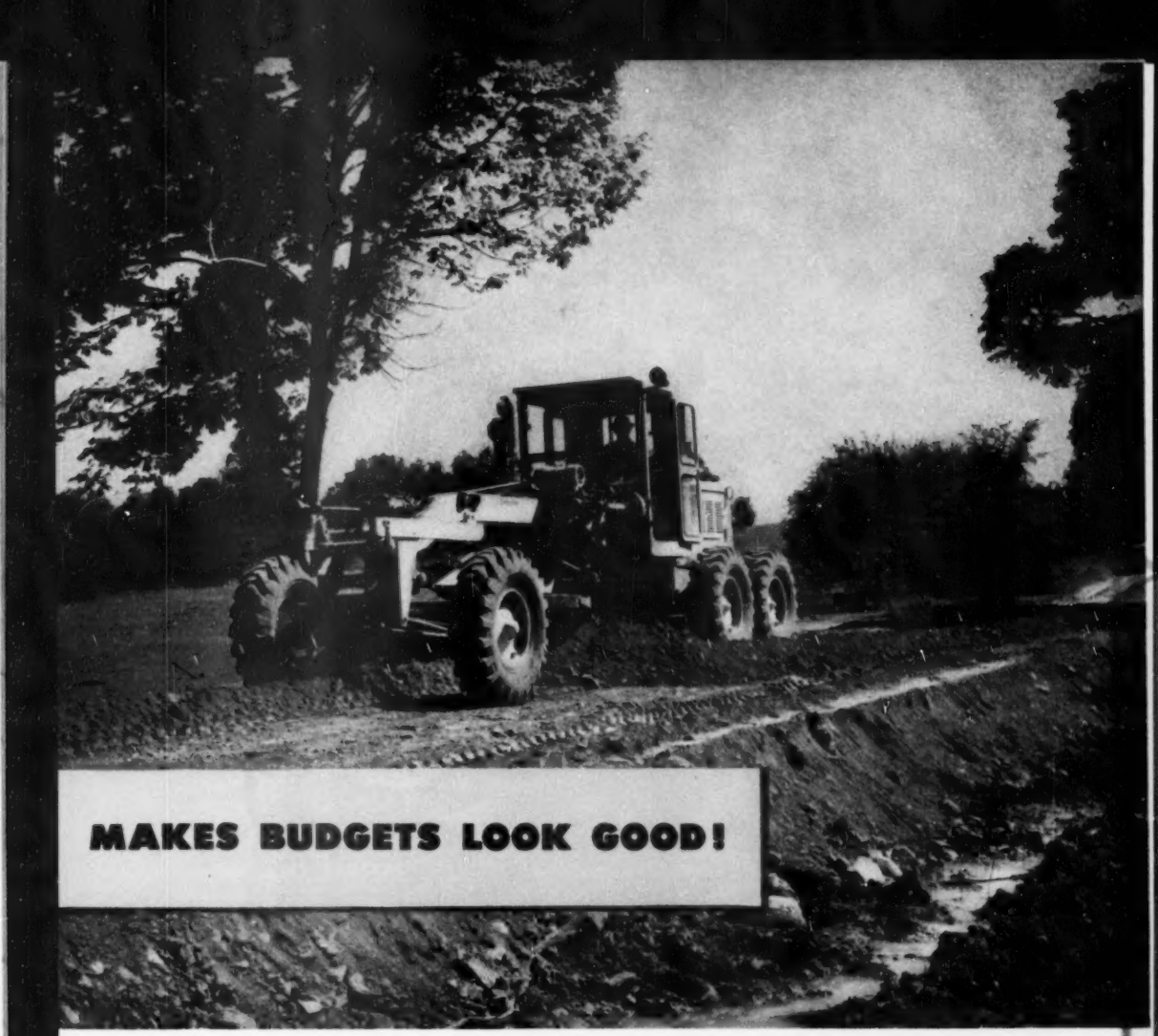
TWO GUTTER BROOM MODEL WITH DUAL DRIVING CONTROLS

CONVEYCO

MOBIL-SWEEPER
DIVISION OF THE CONVEYOR CO.
3260 E. SLAUSON AVENUE LOS ANGELES 58, CALIF.

THE CONVEYOR COMPANY
3260 East Slauson Avenue, Los Angeles 58, Calif. AC-15
Gentlemen:
Please send catalog with complete details and specifications for the Mobil-Sweeper.

Name _____ Title _____
Address _____ City _____
County _____ State _____



MAKES BUDGETS LOOK GOOD!

This "Caterpillar" No. 12 Motor Grader is building a secondary road in Wantage Township, New Jersey. Wilbur Beemer, Superintendent of Highways, says: "We bought 'Caterpillar' because we get fine service from our 'Caterpillar' Dealer, because the cost of maintenance is low and because of the hard work the units can handle."

He's got something there. A "Cat" Motor Grader can handle a lot of road work economically —an important factor considering today's need for keeping budgets in line. With a scarifier, it's a mighty useful tool in black-top construction and maintenance. It can shoulder much of the job—preparation by scarifying, mixing in place and spreading. And because it's sturdily built, you can figure on getting an honest day's work from it day after day.

As rugged as it is, "Caterpillar" equipment will do an even better job for you when given proper maintenance. A few minutes' care a day will result in lower operating costs and longer working life. And remember, your "Caterpillar" Dealer is nearby to help. Make use of all he has to offer.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

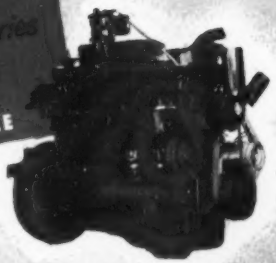
CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

"Built Like a Mack"

MACK built in MACK factories
EXPRESSLY DESIGNED FOR
FIRE-FIGHTING SERVICE



Mack Magnadyne Power—Powering Mack 500 and 600 gpm pumpers and city service trucks—lighter hose wagons and squad cars. Brilliant modern engines give big-apparatus performance and stamina for first time in lighter apparatus. 377 cubic inch displacement—147 brake horsepower. Double ignition, uniquely designed Mack combustion system.

Mack Thermodyne Power—Powering Mack 500, 750, 1000 and 1250 gpm pumpers—larger hose wagons and squad cars—aerial, city service and combination ladder units. 510 and 707 cubic inch displacement—161 and 225 brake horsepower. Overhead valves, double ignition—uniquely designed Mack combustion system.

MEANS FIRE FIGHTING POWER at its best!

Type 405A—500 gpm triple combination pumper with coupe cab.

Type 85—750 gpm triple combination pumper with semi-cab.

Type 95—1,000 gpm triple combination pumper with canopy cab.

Type 85—75-foot, 750 gpm quintuple combination aerial ladder truck with semi-cab. Also available in 65' and 85' aerial ladders.

For quick starts and for fast runs through heavy traffic, over rough back roads or hilly terrain, or for prolonged pumping operations at high pressure and full capacity—Mack gives you fire-fighting power at its best.

All Mack fire apparatus engines are built for fire-fighting service. Greatest reliability of operation and simplicity of servicing are inherent in their six-cylinder design. Full power at lower engine speeds is achieved through large piston displacement. Maximum power from today's fuels is assured by the uniquely designed Mack combustion system.

Over fifty years of research, manufacturing and engineering experience contribute to the superior performance and reliability of Mack engines. Quality control is more thorough because Mack builds more of its engine components than any other fire apparatus manufacturer. And every Mack engine is subjected to the most searching tests at every step of its manufacture—including long test run-ins in the industry's largest and most modern dynamometer testing rooms.

When planning your next purchase of fire apparatus, have your Mack representative give you *all* the reasons why you get the best in performance and reliability when you Modernize with Mack.

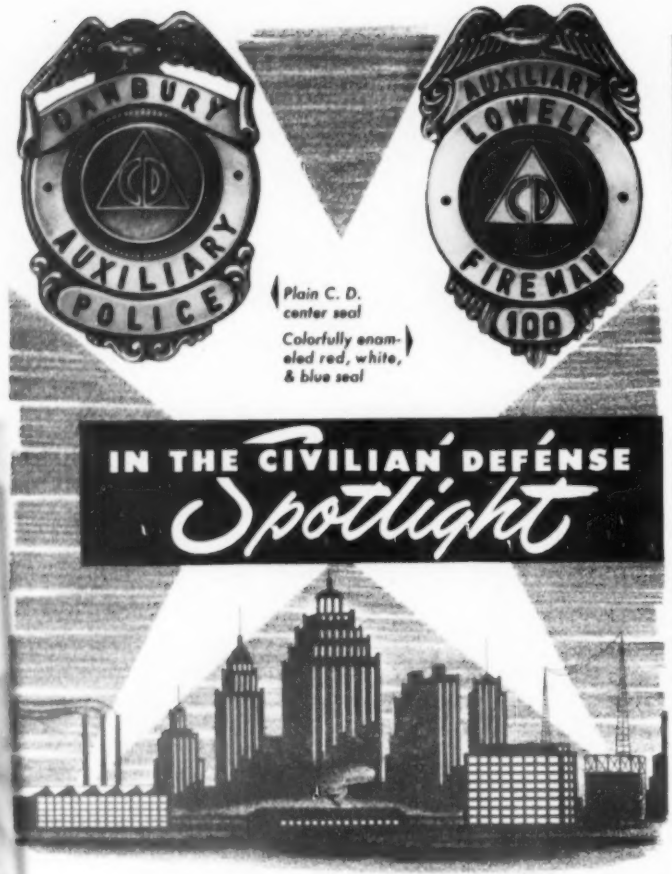
modernize with

Mack
FIRE APPARATUS

MACK MANUFACTURING CORPORATION
Fire Apparatus Division
Allentown, Pa.

Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

TRIPLE COMBINATION PUMPERS—500 TO 1500 GPM . . . SQUAD AND HOSE CARS . . . AERIAL, CITY SERVICE AND COMBINATION LADDER TRUCKS



How about your city or town—are you making plans for Civilian Defense?

WHY has Blackinton been called upon to supply thousands of badges for auxiliary policemen and firemen recently recruited for Civil Defense duties throughout the United States.

THE REASONS ARE SIMPLE: (1) Blackinton has available hundreds of Civilian Defense badge designs, each one a distinctive gem of badge craftsmanship. (2) Blackinton is the oldest insignia manufacturer in the Country — 100 years' experience, that's proof enough. (3) Blackinton is known for the best in service, style, and quality.

Be sure to specify BLACKINTON when ordering badges.

BLACKINTON

V. H. BLACKINTON & CO., INC., ATTLEBORO FALLS, MASS.

Blackinton Badges are furnished nationally through responsible fire and police equipment suppliers as well as leading uniform manufacturers.

Other Catalogs

Write direct to the manufacturers, or use coupon on page 21

Gives 100% Kill of Insects In Breeding Places

676 Tosslts is produced from new formulas that use DDT and BHC and give a 100% kill in all breeding places, reports Sentco, Inc., 2400 North Tamarind Ave., West Palm Beach, Fla. One capsule will larvacide 1,000 square feet of water surface. According to the manufacturer, its product permits wider distribution of field men with consequent savings of valuable time, and makes it possible to larvacide areas inaccessible to power-spraying equipment, and areas difficult to reach with hand-spraying equipment. Write for available leaflet.

Steel Products

677 Principal products of Joseph T. Ryerson & Son, Inc., Chicago 80, Ill., are carbon steel bars, structurals, plates, sheets, tubing, alloys, stainless, and machinery and tools. The manufacturer reports that it is prepared to properly analyze steel, cut and prepare it, and to meet your every steel requirement.

Protects Bituminous Roofs and Metals

678 Laykold Fibrecoat, which protects bituminous roofs and metal, and is employed by industry and the Armed Forces, is discussed in a new brochure issued by the American Bitumuls and Asphalt Co., 200 Bush St., San Francisco 4, Calif. Listed are specifications, application data, approximate costs, and illustrated, detailed information regarding equipment used in applying this weatherproof mineral-armored asphalt.

A New Idea in Truck Loaders

679 According to the Mfg. Division, Service Supply Corp., Philadelphia 32, Pa., the Lodover, 1-yard combination overhead and front-end shovel for International T-9 and TD-9 tractors, loads trucks faster with less wear and tear on the tractor. Hydraulic bucket tilt-back plus balanced tractor power makes it easy to get full bucket loads. Complete overhead cycle, including dump, takes just 20 seconds. Maximum overhead operating height is only 14 feet and 9 inches. Bulletin LO-200 reports on the equipment.

Totally Enclosed Fan-Cooled Motor

680 Construction details of the Allis-Chalmers totally enclosed, fan-cooled motor (Type APZ) are described in a new bulletin, *Totally Enclosed Fan-Cooled and Non-Ventilated Motors*, 51B7225, available upon request from the Allis-Chalmers Mfg. Co., 1185 S. 70th St., Milwaukee 1, Wis. The company reports that the motor is easy to keep clean because of the elimination of internal air passages and dirt-catching pockets. This feature, together with an efficient cooling system, makes the motor suitable for use where there is dirt, fly ash, rain, snow, or corrosive gases.

Sand Spreader has Low Dumping Height

681 A low dumping height of 23 inches is a feature of the sand spreader for seal coating and ice control made by the Central Engrg. Co., Inc., 4429 W. State St., Milwaukee 8, Wis. The twin spreader Model T has variable speeds of individual discs, two spinners, and a large double hopper. Hydro-spreader Model B is an all-purpose machine for ice control, seal coating, and lime spreading used by state highway departments, counties, townships, cities, villages, and contractors. Write for a copy of Bulletin H-1 which reports on the equipment.

here's the right kind of INDUSTRIAL WASTE TREATMENT

B.O.D. *reduced over 98%*

...from 3000 ppm to 33 ppm!

That's the job this industrial waste treatment plant is doing at the L. A. Dreyfus Company in Oaktree, New Jersey. Installed in a residential neighborhood, the plant plays an important part in this Company's comprehensive waste treatment control plan. The flowsheet includes equalization and pre-digestion in special 30' dia. Dorr Digesters followed by the Biofiltration System using a Dorr Clarifier and a Dorreo Distributor.

There's no "cure-all" for industrial waste treatment. But there's a good chance that Dorr's diversified equipment and diversified experience can add up to the *right* kind of solution. The L. A. Dreyfus Company's installation is just one example.

● *If you have a waste treatment problem we would welcome the opportunity to work with your consulting engineers. If you are a consulting engineer actively engaged in waste treatment, our experience is at your disposal.*

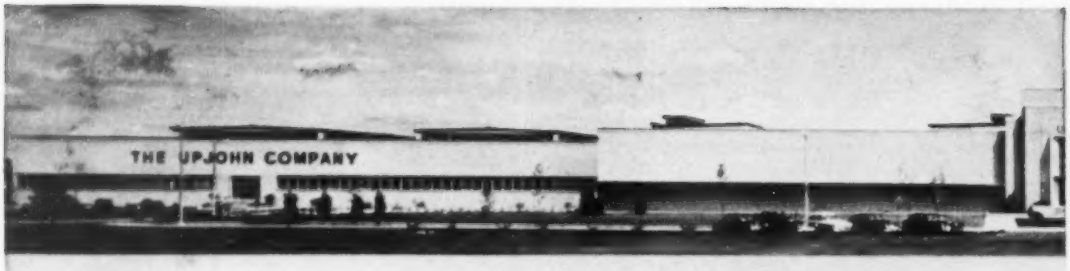
DORRCO

DORR

WORLD - WIDE RESEARCH · ENGINEERING · EQUIPMENT

THE DORR COMPANY · ENGINEERS · STAMFORD, CONN.

Offices, Associated Companies or Representatives in the principal cities of the world



"3 National Machines save us $27,000 a year"... THE Upjohn COMPANY

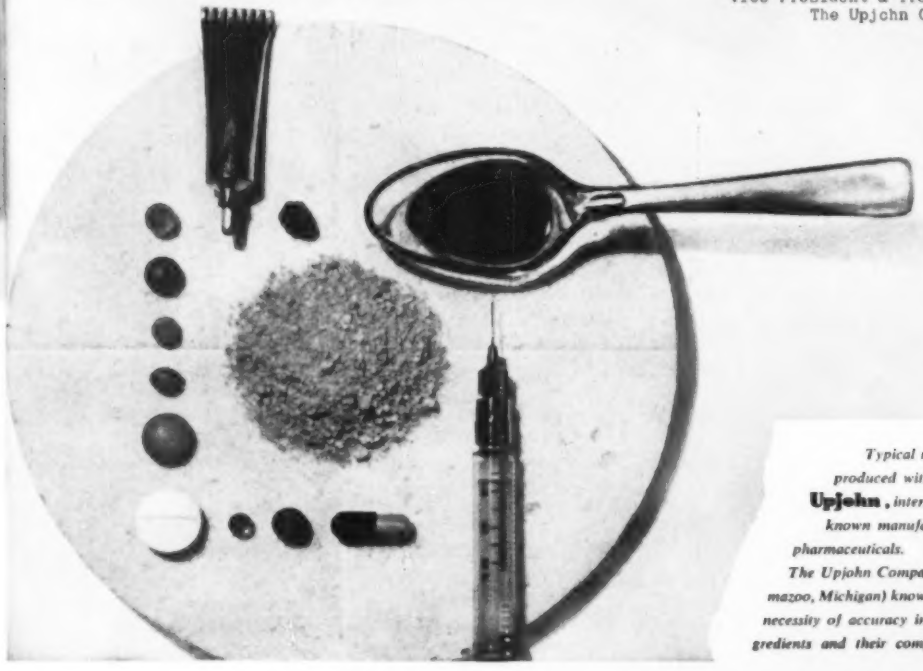
"Three National Payroll-Accounting Machines save us $27,000 a year, which returns their cost every 8 months. We use these machines for payroll writing, analysis and distribution and other accounting jobs.

"Recently we installed two of your Class 31 Accounting Machines for General Accounting work and have recently ordered another for still another job. We expect to effect substantial savings with them as well.

"We also use National Cash Registers in our cafeterias and canteens, and National Adding Machines in our offices. These machines, too, have paid for themselves through savings and other benefits."

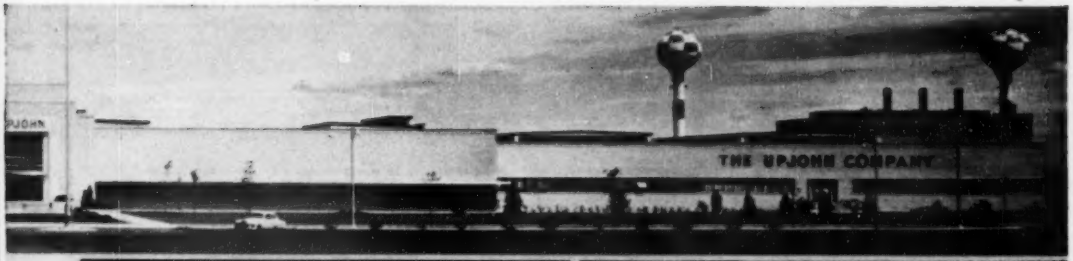
W. J. Knapp

Vice President & Treasurer
The Upjohn Company



Typical medicines, produced with care by **Upjohn**, *internationally known manufacturer of pharmaceuticals.*

The Upjohn Company (Kalamazoo, Michigan) knows the vital necessity of accuracy in their ingredients and their compounding.



NATIONAL PAYROLL-ACCOUNTING MACHINE. (Model used by Upjohn). Has 25 payroll totals, and 42 totals for analysis and distribution.

NATIONAL SALES REGISTER. Pays for itself in Upjohn's cafeterias by speeding service and enforcing correct recordings of transactions.

NATIONAL CLASS 31 ACCOUNTING MACHINE. (Recently installed by Upjohn). Latest development for multiple-duty accounting. Has electrified typewriter for typing descriptions.

NATIONAL ADDING MACHINE. (Model shown used by Upjohn). Has time-and-effort-saving features never before combined on one adding machine.

National machines promote accuracy in accounting by doing up to ⅔ of the work automatically — and what machines do automatically the operators cannot do wrong.

National machines soon pay for themselves out of the money they save, then go on year after year returning their cost as handsome profit.

There is a model for every size and type of business. Let the local National representative, a trained systems analyst, show what *you* can save with the National System suited to your particular needs.

National
ACCOUNTING MACHINES
CASH REGISTERS • ADDING MACHINES

THE NATIONAL CASH REGISTER COMPANY, DAYTON 9, OHIO

Signs OF UNIFORMITY

Complete your street name assembly with the new 12" x6" block number plates. Easily attached and read.

FOUR-WAY BRACKET FOR WHITEWAY POLES PEDESTAL ASSEMBLIES

Smooth traffic control calls for uniform, easy-to-read street markers like this new running-mate of the popular Miro-Flex standard pedestal assembly. Designed for use on either whiteway or utility poles, this cast iron bracket pedestal assembly allows consistant, systematic placement of street markers. Like all Miro-Flex street signs, this model is embossed on zinc-coated, Bonderized steel. Heavy, plated steel and cast aluminum hardware assure a sturdy, rust-proof assembly. Send for catalog.

WRITE TO

THE MIRO-FLEX CO., INC.

1824 EAST SECOND STREET WICHITA, KANSAS

WORTHINGTON-GAMON

LIQUID METERS

All Sizes All Types

WORTHINGTON-GAMON METER DIVISION

Worthington Pump and Machinery Corp.
296 South Street Newark 5, New Jersey

Handiest Location in PITTSBURGH

Hotel Pittsburgher
PITTSBURGH, PA.

Right in the heart of town

Make the PITTSBURGHER your stopping place on every motor trip. Located right in the heart of town . . . easily reached from all major highways. Enjoy the finest in modern facilities, too . . . 400 rooms each with free radio, bath and circulating ice water; 125 rooms with television. Garage service.

a Knott Hotel

JOSEPH F. DUDDY, MANAGER

Ever dig up the same joint twice?

Then you've paid out more than the price of a permanent repair—*without getting permanence.* Recaulking may stop the leak temporarily, but it leaves you with a joint no better than the one that failed. It does nothing to combat the cause of the trouble.

That's why more water men every year are making it standard practice to repair all leaking bell-joints permanently with Dresser Style 60 Clamps. Style 60's are *flexible*-tight. Their resilient gaskets harmlessly absorb stresses which would cause repeated failures in rigid joints.

Obviously, the easiest and cheapest repair is to clamp the *first* time you have the joint uncovered. Next time, why not *make sure* of a permanent repair. Put on a Dresser Style 60 Bell-Joint Clamp.

Write today for literature and prices.

Fix it once... fix it for good!

DRESSER

BELL-JOINT CLAMPS

Dresser Manufacturing Division, 59 Fisher Ave., Bradford, Pa. (One of the Dresser Industries)—In Texas: 1121 Rothwell St., Houston—In Canada: 629 Adelaide St., W., Toronto—Sales Offices: New York, Philadelphia, Chicago, Houston, San Francisco.

Mayor Vincent Impellitteri tries one of the G-E 2-way radios of the new reservoir patrol established by the Office of Civil Defense and the Department of Water Supply, Gas & Electricity. With the Mayor are Seymour N. Siegel, head of CD communications (center), and Water Commissioner Dominick F. Paduano.

Two radio-equipped mobile laboratories for on-the-spot water analysis at reservoirs will permit transmission of bacteria and radiation findings to CD headquarters in seconds. (Above) Mayor Impellitteri confers with city water department officials, B. C. Nesin, D. F. Paduano and A. R. Di Paola.

KEY RADIO SYSTEM IN NEW YORK CIVIL DEFENSE NETWORK INSTALLED BY GENERAL ELECTRIC

Armed guards in 24 radio-equipped jeeps patrol 1000 square miles of watershed area. Mobile radio is vital anti-sabotage link in city's defense.

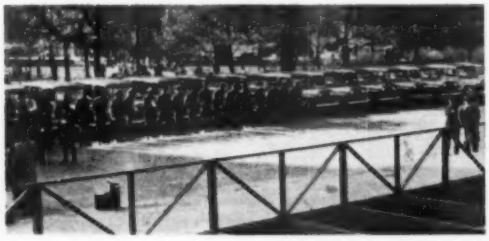
Ten million people in New York's metropolitan area depend on the city's mammoth reservoirs for water. To protect these critical up-state areas, a special watershed guard in radio-equipped jeep station wagons will patrol 1,000 square miles of territory on a 24-hour basis.

Working closely with civil defense and water supply officials, General Electric communication engineers have designed and installed a flexible system which can be expanded easily to cover more municipal defense requirements at any time. The mobile radio units operate on the assigned 40 kc channels, but in the event of future channel-splitting by FCC, the city's equipment can be adapted readily to the new conditions. Transition components have already been supplied by G.E.

Your city's communication problems are the concern of General Electric's CAS*. It's a valuable service to municipalities of any size. Call the G-E office near you for details, or write us: *General Electric Company, Section 1042, Electronics Park, Syracuse, New York.*

*Communications Advisory Service

G-E Transmitter and remote control units at CD headquarters and 9 land stations in metropolitan area permit operation of entire net from any one of several city areas. Mobile net will include 46 units.



Reservoir patrol force of 151 guards will save New York property owners thousands of dollars by speedy discovery and repair of breaks and flood damage. Primary mission of patrol is water supply security.

Lifeline of the nation's largest city is its water supply, typified by Croton Dam, 30 miles up the Hudson from midtown area. Patrolman checking headquarters by radio is also in touch with all other land stations and radio jeeps.

One of several reservoirs that feed New York an average of a billion gallons of water daily, this Catskill lake is under constant surveillance by radio patrol. General Electric mobile units are not affected by humidity or extremes of weather.

You can put your confidence in—

GENERAL ELECTRIC

Great NAMES IN INDUSTRY.. CHOOSE Great DESK TOP EQUIPMENT!

BERT M. MORRIS CO. is *foremost* in the field of *matched* Desk Top Equipment.

The complete setting shown—pen set, memo pad, letter tray, ash tray, and phone rest, retail for less than you would expect to pay for one fountain pen set.

AVAILABLE IN—GREY—BRONZE—WALNUT—MAHOGANY and GREEN

MORRISTRAY—one of the most functional letter trays on the market. Extra sturdy, two point suspension allows quick, easy access from the entire front and both sides. Available in either letter or legal size, tiers may be quickly added—removed—or combined.

THERE IS NO SUBSTITUTE FOR QUALITY. All Morris writing sets are equipped with iridium tipped points and each point is tested and approved at factory for writeability.

Desk Top Package Deals
$100 and $200
Inquire about the surprisingly low cost of matching your desk with these items.

FOUNTAIN PENS—an efficient and economical pen set with "thread-in" point section. A real time and money saver in any office.

BOOK ENDS—at last—inexpensive book ends to match modern office furniture.

MEMO PADS—available in two types. With jewelers bronze bar that drops as paper is used; or standard box style.

MORRISET—The constant flowing, finest all-round writing implement. Holds a full ½ ounces of ink. Choice of 5 quickly replaceable "thread in" points—extra fine, fine, medium, broad, stub.

ASH TRAY—A real He-Man ash tray. Glass lined, perfect for any desk or conference table.

BERT M. MORRIS CO.

Dept. AC-4 8651 West Third Street — Los Angeles 48, California
In Canada: McFarlane Son & Hodgson, Ltd., Montreal, Que.

REALOCK FENCE

gives **locked-in** protection

All fittings on Realock Fence have bolts so placed that nuts cannot be removed from the outside. This means that Realock Fence provides *added protection* for your grounds and property . . . effectively discourages tampering by would-be trespassers.

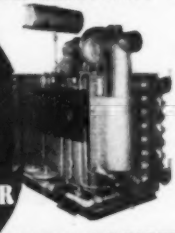
Strongly constructed, Realock Fence has high resistance to the elements because of a special galvanizing process . . . gives permanent protection and trouble-free service year after year. For additional information write our nearest sales office or consult your classified telephone directory.

THE COLORADO FUEL & IRON CORPORATION—Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION—Oakland, California
WICKWIRE SPENCER STEEL DIVISION—Buffalo, New York

REALOCK FENCE
THE COLORADO FUEL & IRON CORPORATION
CF&I
BRANCHES IN ALL KEY CITIES

TEMPERATURE CONTROLLED

P.F.T. DIGESTER HEATER AND HEAT EXCHANGER



P. F. T. Heaters provide close digester temperature controls, assuring highest possible gas production and digested sludge quality. Fired with sewage sludge gas or oil or a combination of fuels. Also utilize waste heat from engine jacket water. Write for Bulletin 135.

P.F.T. **PACIFIC FLUSH TANK CO.**
Waste Treatment Equipment Exclusively Since 1903
4241 RAVENSWOOD AVE. CHICAGO 13, ILLINOIS

Connery's Style W Heating Kettle Made in 75, 110, 165 and 210 Gallons.

For speedy heating of Tar and Asphalt for road, street and airport runway repairs use Connery's style W kettle, the most efficient heating kettle of its kind.

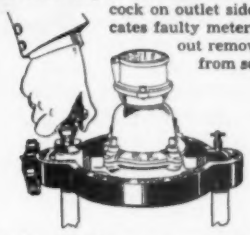
Write for Bulletin 87

CONNERY CONSTRUCTION CO.
4000 N. Second Street Philadelphia 40, Pa.

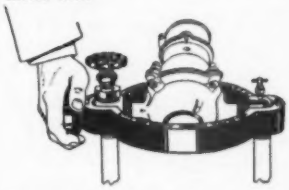
Meter Installation And Removal Now Simplified

With the use of Clark Meter Yokes, installation or removal of meter is a simple job requiring only a few seconds' time. Only one hand is needed, assuring ample visibility in the box.

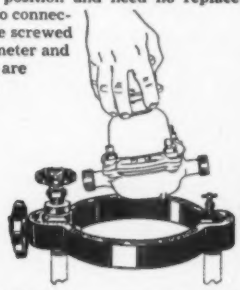
Closing Valve. A few easy turns close the water-way without use of tools. Try-cock on outlet side indicates faulty meter without removing it from service.



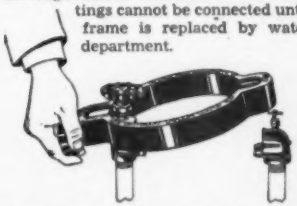
Releasing Meter is accomplished with a few turns of handwheel. Meter tips and rests on yoke frame. It cannot fall over frame and drop to bottom of meter box.



Removing Meter. Just lift out. Gaskets stay in position and need no replacement. No connections are screwed on the meter and no tools are needed.

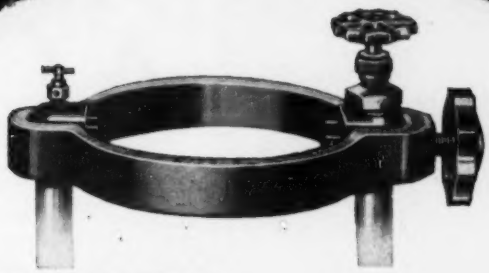


Sealing Service is accomplished by removing frame of Clark Meter Yoke. Fittings cannot be connected until frame is replaced by water department.



For further details and features of these time-saving meter yokes, we suggest that you write the manufacturer, H. W. Clark Co., Mattoon, Illinois . . . mentioning this article and publication.

CLARK METER YOKES
For Easy One-Hand Operation



No. 4 CLARK METER YOKE. Installation is made without bolts, rivets or screws. Outlet try-cock all determines condition of meter and inlet control valve all facilitates easy exchange of meters.

Try-cock Ell

Valve Ell

Bronze Ell and Valve with Copper Connections.

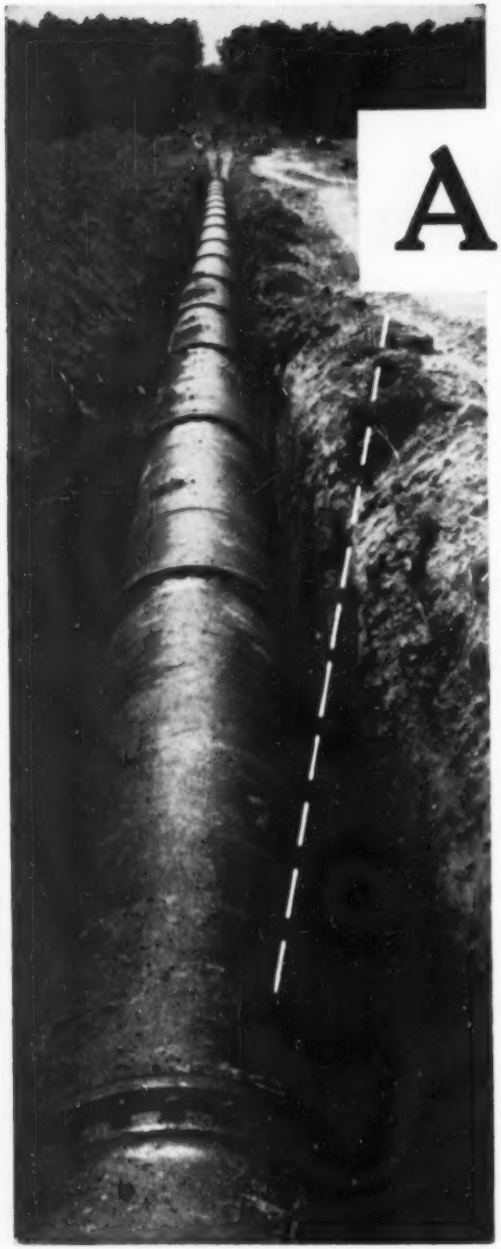
SPACER CLAMP ties riser pipes together rigidly at bottom of meter box and automatically liberates meter when handwheel is loosened.

Thanks to simplified design and construction, Clark Meter Yokes permit easy one-hand operation. They are manufactured in a minimum number of sizes to meet every requirement of simplified operation. Because they eliminate so many parts, Clark Meter Yokes are also economical. Costs of meter couplings, curb stop, service box and several pipe fittings are saved. Circular one-piece cast iron frames give added strength, and these yokes are quickly installed on any type of service line. Available for either iron or copper pipe. To get all the details . . .

Write for New Catalog

H. W. CLARK CO.

MATTOON, ILLINOIS



ACIPCO

When you buy anything, you want the best quality you can get for your money. Our trade-mark cast on our products gives you this assurance. The trade-mark "ACIPCO" means the materials used in manufacturing our pipe are warranted to be first class and the workmanship is guaranteed to be of finest quality.

As America's largest individual cast iron pipe foundry, ACIPCO manufactures a complete line of cast iron pipe and fittings in diameters from 3" to 48", inclusive. The pipe which is made by the Mono-Cast centrifugal process is equipped with any of a wide variety of joints including Bell and Spigot, American Double-X, Molox Ball Joint, Roll-On Joint, Screw-Gland, and Flanged. All ACIPCO pipe is manufactured under close control to meet nationally recognized standard specifications.

Being cast iron, ACIPCO pipe enjoys an enviable reputation. Cast iron pipe has had over three hundred years of service abroad and more than one hundred years of service in the United States. It serves equally well beneath crowded city streets or in cross country installations.

Address ACIPCO office nearest you.

AMERICAN CAST IRON PIPE COMPANY

Birmingham 2, Alabama

Dallas Houston El Paso Pittsburgh Kansas City New York City
Chicago Minneapolis Cleveland Los Angeles San Francisco Seattle

FAIRBANKS-MORSE

DUAL FUEL POWER SAVING OVER $19,000 A YEAR!

In the western Kansas city of Colby, Fairbanks-Morse Dual Fuel Engine economy has been making savings in fuel and lube oil that amount to over $19,000 annually!

But impressive as it is, that isn't the whole story. For this Model 33 Engine has been the mainstay of the plant—operating more than 96% of the time . . . generating more than 83% of the plant's total load.

Fairbanks-Morse Dual Fuel Engines are ideal for all generating service. They can produce savings even when operating under unfavorable load factors. Fairbanks, Morse & Co., Chicago 5, Illinois.

Put Your Power Costs In Order With Fairbanks-Morse Dual Fuel Economies

FAIRBANKS-MORSE,

a name worth remembering

DIESEL AND DUAL FUEL ENGINES • DIESEL LOCOMOTIVES • ELECTRICAL MACHINERY • PUMPS • SCALES • HOME WATER SERVICE EQUIPMENT • RAIL CARS • FARM MACHINERY • MAGNETOS

GOLDAK makes the world's finest LOCATORS

THE *Dualtronic* COMBINATION
PIPE & LEAK DETECTOR

The "Dualtronic" is acclaimed by Municipalities and Utilities throughout the world, because of the time and labor savings effected by one instrument doing the work of two so efficiently and effectively. Ruggedly built! Lightweight! One man operation! The "Dualtronic" is the answer how to cut costs 50%!

Lightweight! Rugged!

GOLDAK
FEATHERWEIGHT MODEL 87
PIPE LOCATOR

Guesswork eliminated. Pinpoint location of pipes, mains, gates, tees, etc. One man operation, total weight 11 lbs.! Strong, positive location signal guaranteed by Licensed circuits and Microtuning, exclusive with Goldak. Lasts a lifetime, guaranteed performance.

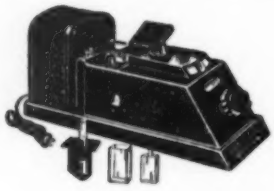
Write for FREE literature!

The GOLDAK Company
Leading Makers of PIPE LOCATORS
Since 1933

1544 W. GLENOAKS BLVD.
GLENDALE 1, CALIFORNIA

KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis

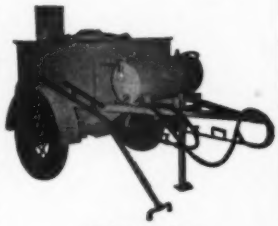


Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.

White Heating Kettles Have Fire-Proof Tops

Cut-back and highly inflammable road repair material can be heated safely in White kettles. FIRE-PROOF top reduces fire hazard.
White asphalt and tar kettles are extensively used. They give long life and satisfaction.
Plain kettles or with hand or engine driven spray pumps for patching pavement. Thermometer, barrel hoist, warming hood extra. All oil burning. Semi-elliptic springs, pneumatic tires.
65, 110, 165, 220, 300 gallon capacities.
Model F-10 is oil jacketed, to heat elastic joint filler.



Other Products

CONCRETE VIBRATORS
Gasoline Engine and Electric Motor Driven Models

FRONT END LOADERS
for Industrial Tractors

ASPHALT PLANTS
Portable—Stationary

KEROSENE TORCHES
3 to 20 gal. capacities

Write for Circulars and Name of Nearest Dealer

White Mfg. Co.
ELKHART 1 INDIANA

There's More Than One "Golden Gate"

There's also CHAPMAN'S *Standard* SLUICE GATE

It's the gate that starts paying back its cost the minute installation begins . . . because it makes the job so quick and easy, with its interchangeable parts that need no match-marking.

And it's the gate that *keeps on paying* . . . by unfailing, instant response to control . . . and by keeping maintenance costs down out of sight.

If repairs and new parts should eventually be needed, here again is the time-saving advantage of interchangeable replacements.

In sum, you can't get more thoroughgoing economy in equipment of this type . . . that's plain to see, on the books of hundreds of projects, the country over. See what *you* can save with Chapman Standard Sluice Gates (with any type of control you want) . . . send for Catalog 25. The Chapman Valve Mfg. Co., Indian Orchard, Mass.

The Chapman Valve Manufacturing Company

INDIAN ORCHARD, MASSACHUSETTS

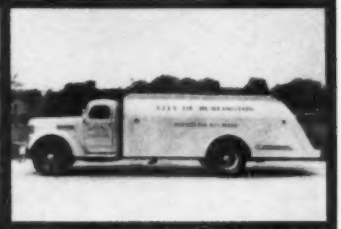
ETNYRES keep streets clean all over the country!

In every state in the Union Etnyre "Sanitary" Street Flushers are used to keep streets thoroughly cleaned, reduce bacterial count and disease hazard, cool pavements, lay dust.

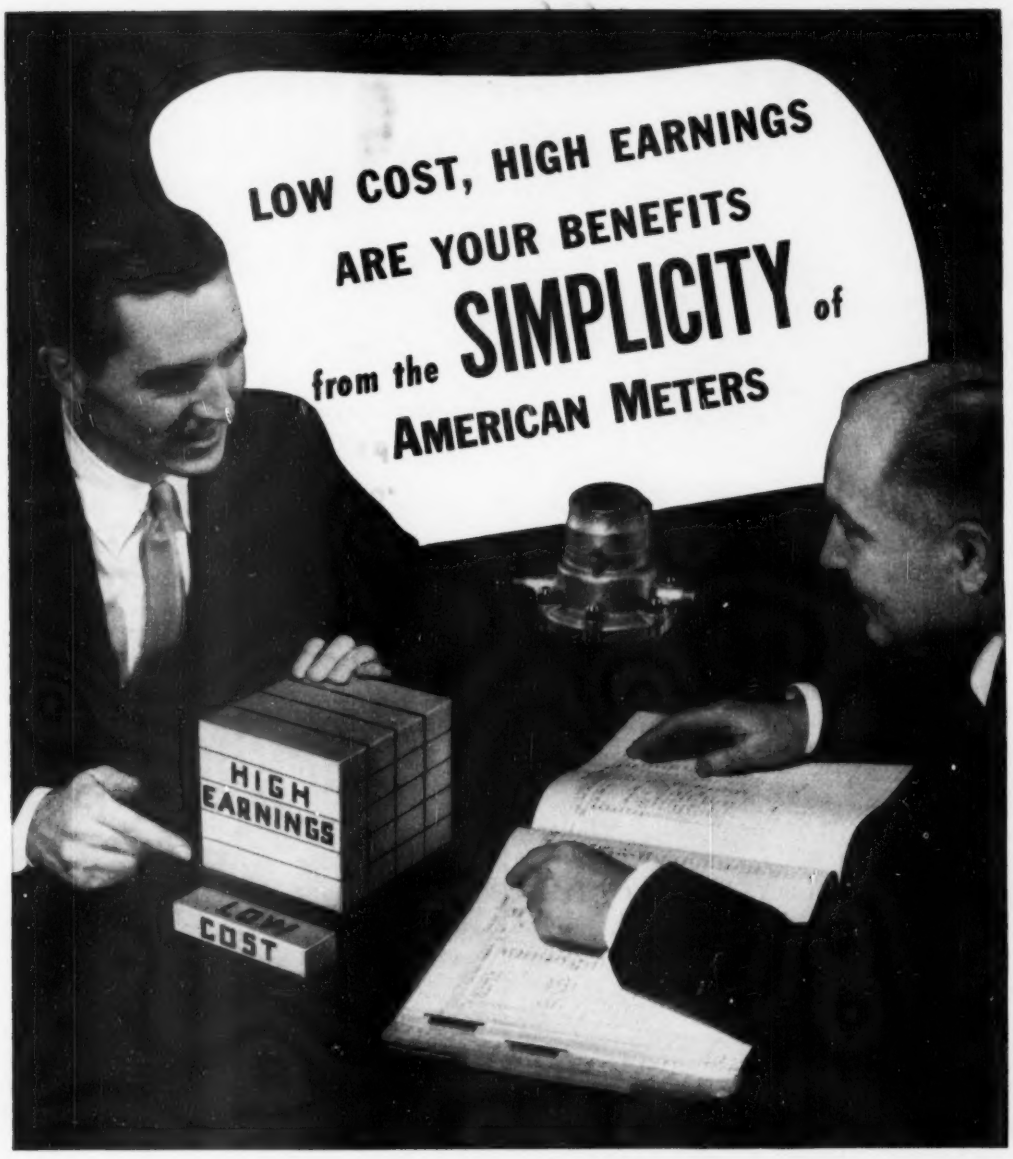
High pressure streams of water clean streets up to 42 feet wide in *one* trip — even under parked cars.

Etnyre Street Flushers are available in four basic styles with front or rear engine drives. Regularly equipped with 3 nozzles, 600 G.P.M. pump, 800 to 3000 gallon tank.

See your dealer or write direct.



E. D. ETNYRE & CO., Oregon, Illinois



• American Meters are accurate and operate for decades without attention. They earn full revenue for you at low first cost and lowest maintenance cost. This is due to the simplicity of design—fewer parts—simpler castings—reduced opportunity for failure. American Meters have become a standard in hundreds of communities — cities and villages — and are giving full value.

BUFFALO METER CO.

2902 MAIN STREET, BUFFALO 14, NEW YORK

UNIVERSAL

is ready for defense too, with plants and portable pipe-making equipment ready to go anywhere!

Our portable equipment doesn't move as fast as our jet fighters, it's true. But, we do have the site-cast pipe making equipment ready to go to work on your municipal, industrial or defense jobs.

Twenty-three Universal plants and affiliates are located throughout the Eastern United States. If it becomes impossible, because of transportation cost, to handle any job economically, our site-cast portable equipment is ready to go.

Contact the home office or any one of the plants listed below, for full details.

Contractors doing business abroad!

All the necessary pipe-making machines and accessory equipment can be supplied you for contracting jobs outside the continental limits. Ask for details.

UNIVERSAL CONCRETE PIPE CO.

Home Office: 297 S. HIGH ST., COLUMBUS 15, OHIO

UNIVERSAL CONCRETE PIPE CO. PLANTS—Decatur and Dothan, Ala.; Tampa, Fla.; Atlanta, Ga.; Kenvil, N. J.; Binghamton, Port Washington, Rochester and Syracuse, N. Y.; Columbus and Zanesville, Ohio; Norristown and Pittsburgh, Pa.; Nashville, Tenn.; Clarksburg, New Martinsville and Wheeling, W. Va. UNIVERSAL AFFILIATES—Concrete Pipe Co. of Ohio with plants in Cleveland, Youngstown and Sandusky, Ohio and Erie, Pa.; Florida Concrete Pipe Co., Ocala, Fla.; Dixie Concrete Pipe Co., Louisville, Ky.

RIC-WIL GIVES SEALED-IN PROTECTION FOR INSULATED PIPING SYSTEMS

Whether your insulated piping system carries steam, hot water, oil, or process liquids, it is given maximum sealed-in protection and efficiency by Ric-wil Prefabricated Insulated Piping Systems.

UNDERGROUND OR OVERHEAD

THE RIC-WIL COMPANY

CLEVELAND OHIO

Ric-wil PREFABRICATED INSULATED PIPING

NEW TYPE EASTERN "A" STANDARD

The most effective warning sign for work areas. Wide base red angle-iron frame won't blow over. Yellow free-swinging sign, black lettering on both sides. Choice of eight standard legends, also reflectorized.

Portable unit stands 27-in. high by 18½-in. wide; folds and locks 18-in. x 18-in. sign in place; flags removable; weighs only 13 lbs.

STOP

NO PARKING THIS SIDE

SPEED LIMIT 35

All Eastern Metal traffic signs are official designs as specified by the Department of Commerce, Bureau of Roads—new legible lettering, heavy-gauge steel and durable flexible baked enamel. Prompt delivery and economical price.

Send for illustrated folder and price list.

INDUSTRIAL • SAFETY EM SIGNS UTILITY • TRAFFIC

EASTERN METAL of Elmira, Inc., Elmira Heights 1, N. Y.

SINCE 1883

TROPICAL

heavy-duty

MAINTENANCE PAINTS

For Special Coatings, Industry has Depended on TROPICAL for 68 Years

Where service is severe, maintenance men have a habit of turning to Tropical heavy-duty paints. In almost any industry you can think of, from steel to textiles, and in commercial buildings and hotels, in schools, colleges, hospitals and institutions, Tropical paints have set records of endurance where the going is tough. Whether the application must resist acid fumes, alkalies, rust or heat . . . on metal, masonry, wood or concrete . . . on floors, walls, ceilings, roofs, machines or equipment . . . there is a Tropical paint *that has proved it can do the job better!* Take advantage of the experience, advice and personal service offered by your local Tropical maintenance paint specialist. Write us today.

Since 1883

HEAVY-DUTY MAINTENANCE PAINTS

TROPICAL®

SUBSIDIARY OF PARKER RUST PROOF COMPANY

MAKERS OF Bonderite QUALITY CORROSION RESISTANT

THOUSANDS OF MUNICIPALITIES specify TROPICAL

Tropical heavy-duty paints mean extra dollars of service to budgeted buyers—from street marking paints to special coatings for filtration bed wash troughs . . . bus tops to boiler fronts . . . water tank interiors, gas holders, swimming pools and gym floors. Wherever rust, abrasion, heat, moisture or fumes quickly destroy ordinary maintenance paints, Tropical gives *enduring* service!

FREE! **Send for your free copy of the "Industrial Paint Index"—a quick, convenient reference chart for a multitude of maintenance paint applications.**

THE TROPICAL PAINT & OIL COMPANY • 1112-1298 West 70th St., Cleveland 2, Ohio

This is the pipe

that's known as the

Taxpayers' Friend

To a tax-burdened public the statement that cast iron pipe is the "taxpayers' friend" is more than a mere figure of speech. To most waterworks engineers it is a cold fact. They know that cast iron pipe in water distribution systems has saved, and continues to save, millions of dollars in local taxes.

The useful life of cast iron pipe is known to be 4 to 5 times the average term of a water revenue bond issue. More than 35 American cities have cast iron mains in service that were installed over 100 years ago. A survey sponsored by three waterworks associations shows that 96% of all six-inch and larger cast iron pipe *ever laid* in 25 representative cities, is still in service.

Fortunately for taxpayers, over 95% of the pipe in America's water distribution systems is long-lived cast iron pipe—*the taxpayers' friend.*

This cast iron water main installed in Richmond, Virginia, 120 years ago, is still in service. Over 35 other cities have century-old cast iron mains in service.

CAST IRON ®

CAST IRON PIPE

America's No. 1 Tax Saver

©1952, Cast Iron Pipe Research Association

CAST IRON PIPE RESEARCH ASSOCIATION, THOS. F. WOLFE, MANAGING DIRECTOR, 122 SO. MICHIGAN AVE., CHICAGO 3.

Some of the Jobs HUBER MAINTAINERS Are Doing

NATIONAL GOVERNMENTS

Grading and maintenance work on highways and secondary roads in national parks, reservations, national public lands.

STATES

Highway grading and maintenance service of many kinds including berm grading, mowing, ditch cleaning, etc.

COUNTIES

Highway and secondary road grading and maintenance work. Counties owning attachments keep HUBERS busy every month of the year.

MUNICIPALITIES

Street and alley grading and maintenance; every type of maintainer attachment is in municipal service.

TOWNSHIPS

Townships charged with road maintenance are among favorite users of Huber Maintainers for grader and maintenance work.

PUBLIC GROUNDS

Parks, playgrounds, conservation areas, publicly-owned beach areas need and use HUBERS for grader and maintenance service.

OIL FIELDS

HUBERS are at work in the oil fields, grading and maintaining off-the-highway roads and building dams around oil wells and storage tanks.

CEMETERIES

Cemeteries keep HUBERS busy every month, grading and maintaining drives, mowing, developing new grounds, removing snow, patching pavements, etc.

AIRPORTS

HUBERS are tailor-made for airport service, grading unpaved areas, patching paved areas, mowing, removing snow, towing planes, etc.

LOGGING

Grading and maintaining logging camp roads, mowing, bulldozer service.

INDUSTRIES

Many industrial users include factories with sizeable grounds and miles of roadways; lift loader widely used for cleanup work around factory sites.

MINES

Grading and maintenance of roadways; broom widely used around strip mines to sweep coal veins before removal.

ESTATES & RANCHES

Grading and maintenance of roadways; lift loader for cleanup; mower widely used.

RACE TRACKS

Grading and maintenance of track and of surrounding roadways and grounds.

CONTRACTORS

Contractors, large and small, in all kinds of contract work, are enthusiastic HUBER users. They like versatility of HUBERS, ability to move rapidly from one job to another.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.

Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers

HUBER

more than 1600 cities, towns, contractors now use . . .

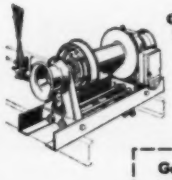
GarWood LOAD-PACKERS

• To Cut Refuse Collection Costs
• To Improve Public Health

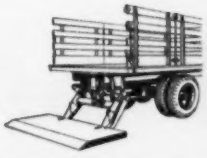
Gar Wood Load-Packers have reduced refuse collection costs for more than 1600 users (including cities of all sizes and small towns). Not only are costs cut to a minimum . . . but the Load-Packer has also proved best for promoting municipal cleanliness and public health.

Among the important features of the Load-Packer are: (1) faster loading, (2) completely enclosed body, (3) low loading hopper, (4) push button operation, (5) compression loading for maximum loads and fewer trips, (6) fast, clean dumping, (7) reduced maintenance. See for yourself why the Load-Packer is by far the most popular refuse collection unit. Use the coupon below . . . today.

Gar Wood Dump Bodies and Hoists



Gar Wood Winches



Gar Wood Elevating End-Gate

52-2

GAR WOOD GW INDUSTRIES

GAR WOOD INDUSTRIES, INC.

Wayne Division • EXECUTIVE OFFICES, WAYNE, MICHIGAN

TRUCK EQUIPMENT: Dump Truck Bodies & Hoists, Winches & Cranes, Refuse Collection Bodies, Elevating End-Gates. CONSTRUCTION EQUIPMENT: Excavators, Scrapers, Dozers, Ditchers, Spreaders, Finegraders, Truck-Mounted Road Graders

Gar Wood Industries, Inc.
Executive Offices, Wayne, Michigan

Please send me Bulletin M60 explaining the many advantages of Gar Wood Load-Packers. Also bulletins on other items checked:

☐ Dump Bodies ☐ Elevating End-Gate ☐ Winches

Name_____

Title_____

Address_____

Here's a unit that's a whiz on dirt and gravel. It's a world beater, too, for cutting dangerous hard-packed snow or ice. Truth is

the FWD "Maintainer" sees action year 'round

Send the "Maintainer" out to scrape dangerous ice and snow. Get the job done fast. Ideal, too, for early spring grading.

FWD "Maintainers" handle plowing jobs, without rolling up high repair costs that put other equipment in repair shops.

Fast, efficient sanding on icy roads is another of the many uses of the "Maintainer." Excellent for gravel spreading, too.

Yes, "Maintainers" are always on the go, keeping roads in up-to-the-minute driving condition. The truck and blade do a complete job, smoothing out washboard roads, covering holes, cutting ice — making roads safe and comfortable. Travels fast from job to job. You get far more service than from other types of road maintenance equipment. Save tax dollars, too. Get the facts from your FWD distributor or THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis., and Kitchener, Ontario.

Built by the makers of America's Foremost Heavy-Duty Trucks

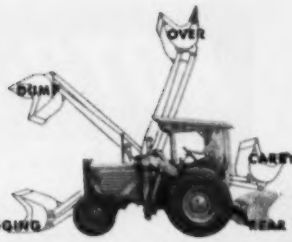
You buy more than a truck when you buy an FWD Maintainer

Extra-traction and proper distribution of weight and power give you:

- Ability to work more days per year
- Multi-purpose performance — does over 60 different jobs
- Maintains at speeds up to 12 m.p.h. Feathers up to 18 m.p.h.
- Over-the-highway speed up to 42 m.p.h.
- Safe, easy travel off the highway
- Economies that mean more miles of finished road per tax dollar

World-Wide Sales and Service

a STRAIT-LINE is Your Shortest path to Profits!



Digs in Rear . . . or Digs in Front

Push-Tilt assures fuller buckets even in fine plaster sand.

It takes plenty of traction to move from bank to truck in rough going like this. Rear-carried bucket makes it possible. And, in hard banks, the extra traction and Push-Tilt give you the same fast, profitable loading.

But here is its Biggest Advantage ...ADDED TRACTION FROM REAR-CARRIED BUCKET

An Oliver Industrial Wheel Tractor and Strait-Line Loader is the biggest profit asset for any loading operation. It digs in back . . . or digs in front . . . *and loads in front.* No time-wasting turning or backing required.

Here's proof. These photos were taken loading out *plaster sand,* so fine it squirted out through a ten-penny nail hole in the truck body in a stream 4 inches long. Despite this difficult going, the tractor and Strait-Line wheeled its bucket loads *upgrade* without spinning. It ran back from truck to bank with force. This extra traction for difficult conditions is created by the rear carried bucket.

This is a condition where rear digging solved the problem. In fact, under most conditions, the operator can do *more* with rear digging.

Why not check the Oliver Industrial Wheel Tractor Strait-Line for your loading.

OLIVER

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors.

THE OLIVER CORPORATION
19300 Euclid Avenue, Cleveland 17, Ohio
Please send me literature on the versatile Oliver Wheel Tractor Strait-Line Loader.

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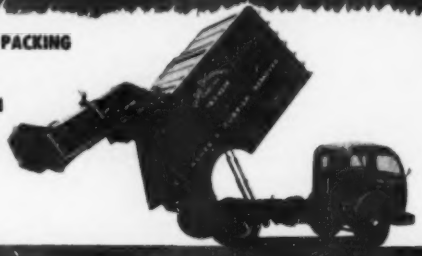
Company.....
Address.....
City.....Zone....State.....

ROTO·PAC

THE MODERN REFUSE COLLECTION UNIT

THE FASTEST ALL-PURPOSE REFUSE LOADER IN THE WORLD!

AUTOMATIC AND CONTINUOUS LOADING AND PACKING
OPERATES UNDER LOWEST OIL PRESSURE
PACKS WITHOUT EXTRA MOTOR EXHILARATION
SAVES GAS, SAVES WEAR ON MOTOR
SAVES MONEY IN OPERATION



There is nothing faster or more efficient than ROTO-PAC'S AUTOMATIC continuous loading and packing.

This ROTO-PAC feature makes loading and packing one operation. It therefore, eliminates the usual and wearing motor exhilaration, or surge of power, required by other units in packing hopper refuse into truck body. It completely eliminates the usual "dwell period" where the crew waits for hopper to empty.

The ROTO-PAC hopper has the lowest loading height of any equipment, so that cans can be dumped from a "straight-up" position. Boxes and similar refuse are broken up in automatic first and second compaction; while ashes and other heavy material, because of the automatic feature, cannot fall back into the hopper.

Yes, workers do a faster job, easier with ROTO-PAC . . . the refuse loader that works longer without breakdown . . . the refuse loader that operates more economically to save you money.

Achieve faster, cleaner and more economical refuse collection with ROTO-PAC

write

CITY TANK CORP.

53-09 97TH PLACE

CORONA, LONG ISLAND, N. Y.

THERE'S A WAY TO STOP GRADE CROSSING ACCIDENTS!

Hundreds of communities have solved the problem — made their crossings safe 24 hours a day with

Model 10

AUTOMATICALLY OPERATED
HIGHWAY-RAILROAD
GRADE CROSSING SIGNALS

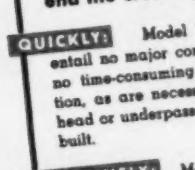
Model 10 Signals end the crossing menace...

QUICKLY: Model 10 installations entail no major construction work, no time-consuming legislative action, as are necessary when overhead or underpass separations are built.

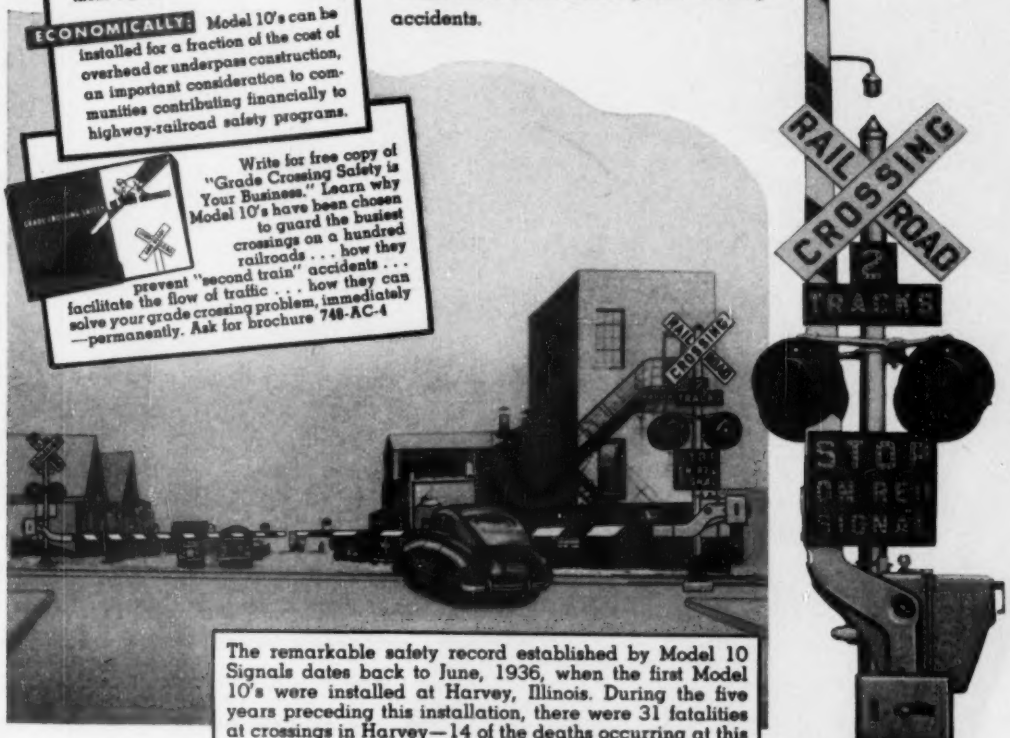
EFFECTIVELY: Model 10's operate unfailingly — automatically, in all kinds of weather. Not a single accident has ever occurred as a result of operative failure on the part of these signals.

ECONOMICALLY: Model 10's can be installed for a fraction of the cost of overhead or underpass construction, an important consideration to communities contributing financially to highway-railroad safety programs.

Yes, thousands of crossings have been made safe, and thousands of lives spared, because local officials and civic groups co-operated with the railroads in a concerted effort to eliminate grade crossing accidents.



Write for free copy of "Grade Crossing Safety is Your Business." Learn why Model 10's have been chosen to guard the busiest crossings on a hundred railroads . . . how they prevent "second train" accidents . . . facilitate the flow of traffic . . . how they can solve your grade crossing problem, immediately —permanently. Ask for brochure 748-AC-4

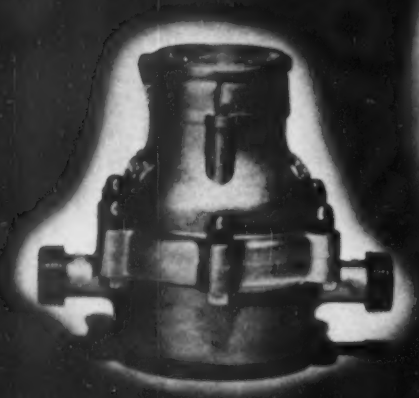


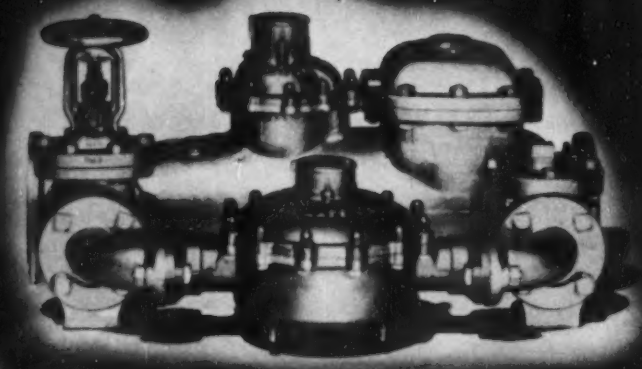
The remarkable safety record established by Model 10 Signals dates back to June, 1936, when the first Model 10's were installed at Harvey, Illinois. During the five years preceding this installation, there were 31 fatalities at crossings in Harvey—14 of the deaths occurring at this crossing alone. *Since Model 10's were installed here, not a single accident has occurred.*

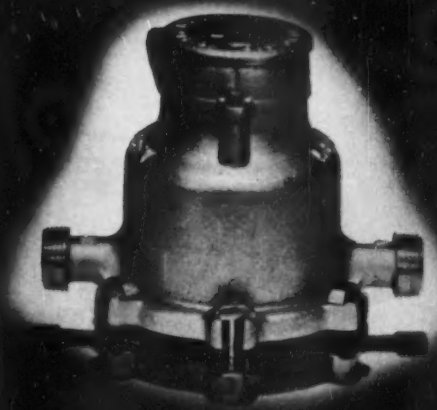
CERTIFICATE OF MERIT for Safety awarded to WESTERN RAILROAD SUPPLY CO. BY THE NEW YORK HERALD TRIBUNE

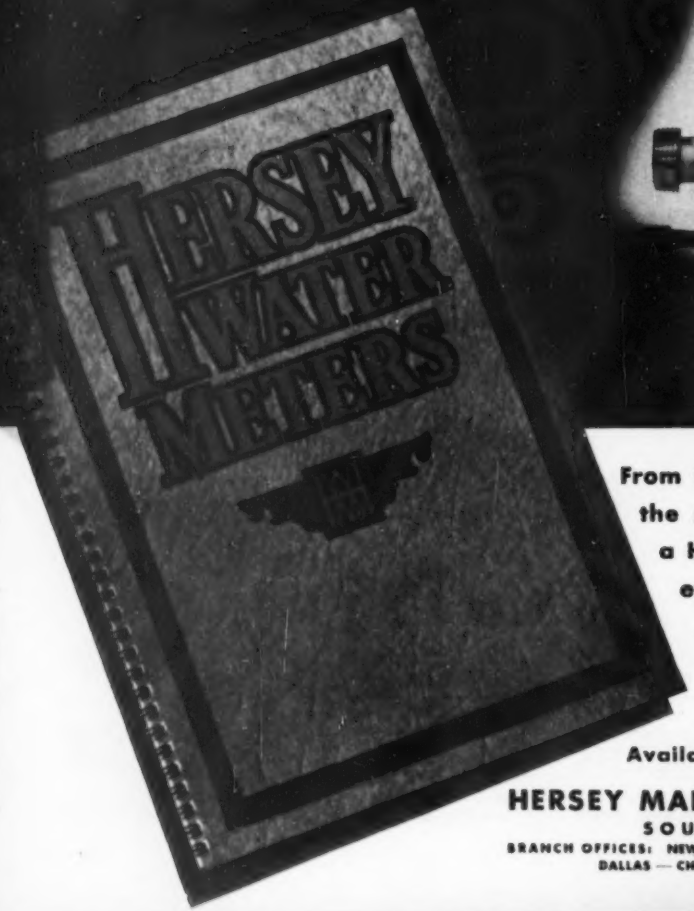
WESTERN RAILROAD SUPPLY COMPANY

General Offices and Factory:
2428 SOUTH ASHLAND AVENUE • CHICAGO 8, ILLINOIS









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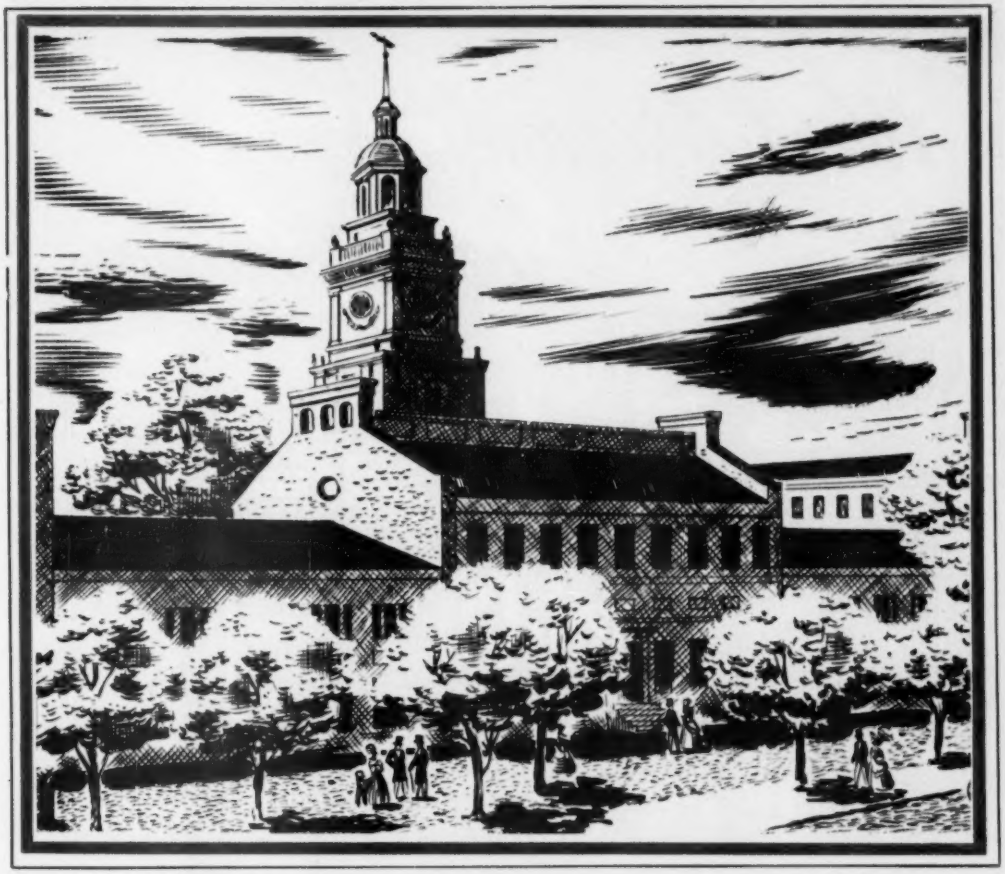

Philadelphia's Independence Hall, where the Liberty Bell is housed, as it looked 100 years ago

Philadelphia has cast iron water and gas mains in service that were laid well over a century ago. One of them is America's oldest cast iron water main, still functioning despite the radically changed conditions of street traffic and underground utility services in 100 years. The fact that cast iron pipe, laid generations ago, withstands the shock of heavy-duty traffic and the stresses caused by congested underground structures, amply demonstrates its shock-strength and beam-strength. Because of these strength factors and effective resistance to corrosion, cast iron water and gas mains, laid over 100 years ago, are still serving in the streets of more than 30 cities in the United States and Canada. **United States Pipe and Foundry Co., General Offices, Burlington, N. J. Plants and Sales Offices Throughout the U. S. A.**

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NUMBER EIGHT OF A SERIES

For those who prefer manually operated parking meters, you can't buy better than the MI-CO manual.

For those who like automatics, the MI-CO Twin fills the bill . . . because if it's a MI-CO, it's got to be good. And whether you install MI-CO manuals or the MI-CO Twin automatic, you put your money on the class of the parking meter field.

Both MI-CO's are well-known for their dependable operation, low upkeep costs, and consistently high earnings. You can count on either meter doing the job efficiently and effectively in all kinds of weather and under the severest operating conditions.

Write for complete information and case histories on both types of meters. Compare these records with the reports of other makes. We believe you will agree that MI-CO is your best parking meter buy.

MI-CO METERS, 231 Court Street, Covington, Ky.

Division of The Michaels Art Bronze Co., Inc.

THIS man is a Pitt Chem corrosion engineer. His job is an important one—to show maintenance engineers how to add years of life to hard-to-replace equipment with Pitt Chem Tar Base Coatings.

These versatile coatings are derived from coal tar pitch, one of our most impervious materials. They're low in cost, easy to apply, and their heavy film—up to ten times as thick as ordinary paint—provides an impenetrable barrier to most mineral acids, alkalis, corrosive vapors and atmospheric conditions.

You can depend on Pitt Chem Tar Base Coatings for top uniform quality because we control every phase of production from coal to finished coating. That's your assurance of top-grade application characteristics, uniform bond and maximum protection. ● More information, or field application assistance will gladly be sent on request.

PITT CHEM 101
A versatile, heavy duty coating that withstands severest corrosive conditions.

PITT CHEM 102
A thin, high gloss maintenance coating for steel and concrete surfaces.

PITT CHEM 103
A heavy duty coating for metal exposed to corrosive vapors, dilute acids and alkalis.

PITT CHEM 104
A fast drying, high gloss coating for equipment handling potable water.

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COAL CHEMICALS • AGRICULTURAL CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

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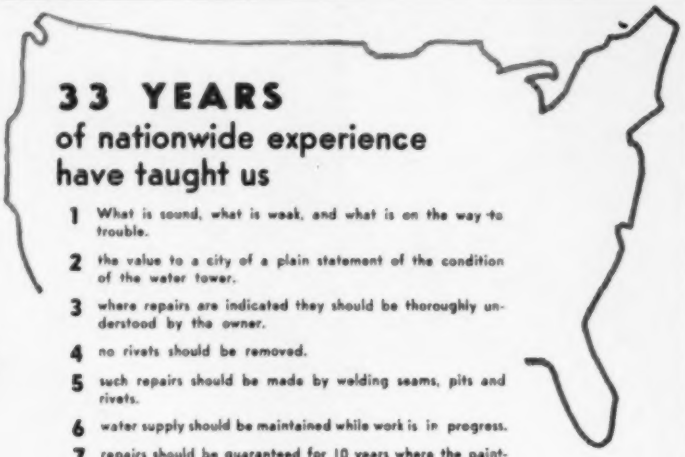

33 YEARS
of nationwide experience have taught us

1. What is sound, what is weak, and what is on the way to trouble.
2. the value to a city of a plain statement of the condition of the water tower.
3. where repairs are indicated they should be thoroughly understood by the owner.
4. no rivets should be removed.
5. such repairs should be made by welding seams, pits and rivets.
6. water supply should be maintained while work is in progress.
7. repairs should be guaranteed for 10 years where the painting is every five years.
8. painting on fully reconditioned towers should be guaranteed for 5 years.
9. inspections should be yearly at no cost to the municipality.
10. It's better to write us today.

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APCO-V-APCO PRIMERS

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AUTOMATIC POWER OR TANK PRIMERS
SINGLE OR DUPLEX UNITS
DUAL DRIVE WITH GASOLINE ENGINE
ALL UNITS ENTIRELY AUTOMATIC

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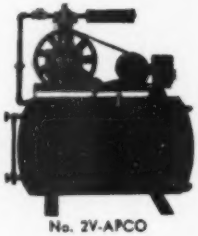

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***Throughout* America—Dickinson Lawn Seed**

In parks and on public grounds throughout America you will find smooth velvety lawns built with time proven Dickinson lawn grass seed. Quality seed, blended according to formulas that have been tested and improved throughout the years. Write for complete information.

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BURKE-BUILT PLAYGROUND EQUIPMENT

Unequalled for Safety, Durability and Low Maintenance Cost!

Compare the massive heavily ribbed, greater length fittings of hot dipped galvanized iron with the interlocking knob construction against any other.

Consider such Burke Built exclusives as the popular Climb-A-Round and Hobby-Horse Swing Set.

For complete illustrated catalog, price list or FREE playground Planning Aid Booklet, Write Dept. K.

Where Price and Reliability Go Hand in Hand

BUY BURKE BETTERBUILT

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The choice of park and recreation officials from coast to coast.

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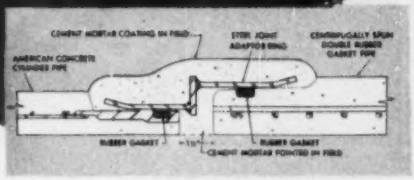
Factory Branch, Box 986, New Brunswick, N. J.

A Money-Saving Combination!

Wherever Pressure Conditions Permit·· Different Classes of American Reinforced Concrete Pressure Pipe Can Be Combined in the Same Water Transmission Line


CEMENT MORTAR COATING IN FIELD
STEEL JOINT ADAPTOR RING
CENTRIFUGALLY SPUN DOUBLE RUBBER GASKET PIPE
AMERICAN CONCRETE CYLINDER PIPE
RUBBER GASKET
RUBBER GASKET
CEMENT MORTAR POINTED IN FIELD

Here's a typical example of the ability of American to meet specific project requirements... to give you a carefully laid out and engineered pipe line. You'll like the simplified planning and ease of installation this feature gives you.

By designing your pipe line to meet such specific project requirements you will achieve...

Greater Economy in Cost!

You know that reinforced concrete pressure pipe gives you the strength of steel and the permanence of concrete... with reductions in initial cost, lower installation costs, sustained capacity, and trouble-free service. Four classes of reinforced concrete pressure pipe are available to meet varying requirements.

So why not use the proper combination of these classes of pipe, where pressure ranges differ, to meet the needs not only of high pressure service but the needs of intermediate and low pressure service as well?

You'll find it the most economical way to plan a major capital investment...

...with Greater Savings in Critical Materials!

The conservative design principles of reinforced concrete pressure pipe are such that economical use may be made of steel and concrete to meet design requirements with appreciable savings in critical materials.

During the present defense emergency, these are valuable savings to make... and, they are savings that ease the problems of procurement, with less drain on the national economy.

So... if you find that the pressure ranges in your line are going to differ widely, give us the opportunity to show you how the combination of different classes of American reinforced concrete pressure pipe can save you money.

How American Concrete Cylinder Pipe Is Joined To American Non-Cylinder Pressure Pipe

A simple adaptor ring provides the transition between the spigot ends of two different classes of pipe.

In all classes of reinforced concrete pressure pipe manufactured by American, the rubber gasket is confined by a joint ring to a definite groove in the spigot end of the pipe, thus assuring the most positive and safest use of the gasket as a water seal under all normal operating conditions.

Recent Typical Installations Where This Feature Is Being Used to Obtain REDUCTIONS IN THE COST OF DELIVERED WATER

San Dieguito Irrigation District, Encinitas, California

City of Whittier, California

City of Pasadena, California

Pomona Valley Municipal Water District (now being installed) Pomona, California

Four Plants to Serve You

American manufactures four classes of reinforced concrete pressure pipe in diameters ranging from 12 in. to 12 ft., and for all pressures related to to modern American waterworks practice.

American PIPE AND CONSTRUCTION CO.

Concrete Pipe for Main Water Supply Lines, Storm and Sanitary Sewers, Subaqueous Pipe Lines
P. O. Box 3428, Terminal Annex, Los Angeles 54, California

MAIN OFFICES AND PLANT—4635 FIRESTONE BOULEVARD, SOUTH GATE, CALIFORNIA
DISTRICT OFFICES AND PLANTS—OAKLAND—SAN DIEGO—PORTLAND, OREGON

How to Build

PREPARES THE SITE.

A Drott Bullclam on a rugged International crawler scoops out a trench for sanitary fill. Richmond calls this specially-designed unit a regular one-man sanitation squad.

SPREADS AND COMPACTS REFUSE.

TRANSPORTS AND SPREADS EARTH COVER.

The Bullclam covers each day's refuse at the end of the day. Nearby homeowners report no bad smells or flies, are pleased to see wasteland improved.

GRADES AND LEVELS FINISHED AREA.

a Playground

International power behind the specially-curved Bullclam front crushes trash and garbage flat. Sixty-five trucks bring refuse to Richmond's disposal sites.

When the Bullclam completes a job, the reclaimed land is ideal for parks, playgrounds and parking areas for future industrial sites.

Richmond, Virginia, uses 1,000,000 cubic yards of refuse per year to turn worthless land into public parks

Cost per cubic yard is far below national average

Cities far distant from Virginia know that Richmond's big sanitary fill operation is a model for low-cost refuse disposal and land improvement.

Richmond runs six sanitary-fill sites at a time. Builds fills 15 to 40 feet deep. Uses International crawlers equipped with Drott Bullclams—the *ONLY* units specifically designed to do all four steps of the complete sanitary-fill job.

These "one-man sanitation squads" spread and crush refuse all day, cover with fresh earth each night, turn worthless wasteland into park-playgrounds.

Richmond disposes of 1,000,000 cubic yards of refuse a year, at a cost of only 9 cents a yard—and that figure includes operating costs and depreciation. Disposal areas are policed to keep out scavengers. The whole operation is a model of cleanliness and efficiency as well as economy.

If your city is not already doing it, more than likely you, too, can cut disposal costs and raise land values the International Crawler-Drott Bullclam way! Ask your International Industrial Distributor for details. Or write now to:

Drott Manufacturing Corporation, Milwaukee 8, Wisconsin

International Harvester Company, Chicago 1, Illinois

BULLCLAM BY

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ESSENTIAL EQUIPMENT for EFFICIENT STREET AND HIGHWAY MANAGEMENT!

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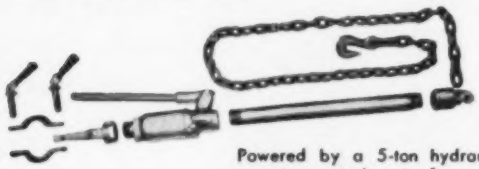
HYDRAULIC
METAL POST STRAIGHTENER

Saves valuable man-hours by efficiently and quickly straightening metal posts. Used extensively by states, cities, counties and towns for straightening parking meter posts, highway signs and metal fence posts of all kinds. Pays for itself over and over again!



Powered by a 5-ton hydraulic jack with all the necessary attachments for a quick efficient set-up. Simple, safe and easy to operate! Fully portable . . . entire unit weighs only 30½ lbs.

See your supplier or write direct for prices and further information.

H. K. PORTER, INC., Somerville 43, Mass.
Manufacturers of PORTER CUTTERS, PORTER PRUNERS and PORTER-FERGUSON Auto Body and Fender Repair Tools

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

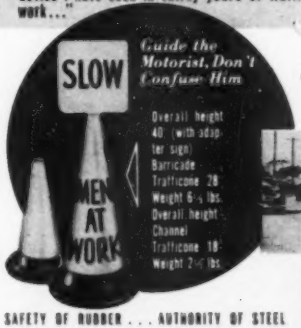
Prompt Shipment

Inquiries and orders solicited

NORTHERN GRAVEL COMPANY
Muscatine, Iowa
P. O. Box No. 307 **Phone: 193**

Trafficone SYSTEM of TRAFFIC CONTROL LEADS the NATION in *Economy Efficiency and Safety*

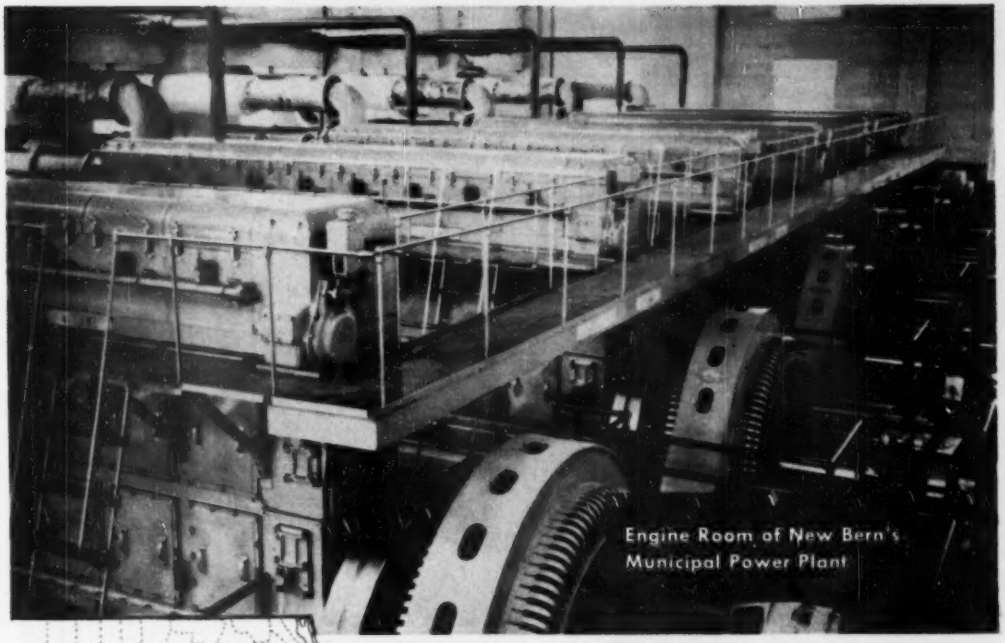
say top traffic experts
"The Trafficone is the best engineered safety device I have seen in thirty years of traffic work..."


SLOW
MEN AT WORK
Guide the Motorist, Don't Confuse Him
Overall height 40 (with adapter sign) Barricade Trafficone 28 Weight 6½ lbs.
Overall height Channel Trafficone 18 Weight 2½ lbs.

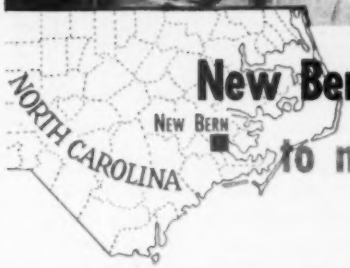
SAFETY OF RUBBER . . . AUTHORITY OF STEEL
Traffiicones are rapidly replacing old fashioned hazardous wooden and metal barricades and expensive flags and wire markers. Dangerous accident conditions to motorists and personal injury problems with workers have been eliminated with this safe, yet effective control.

STORAGE and TRANSPORTATION is SIMPLE with TRAFFICONES. A minimum of space is required for TRAFFICONE storage because of their stacking feature. One truck and one man can now erect barricades and traffic controls over large areas where it used to take two or more, and in 1/10 the time.

INTERSTATE RUBBER PRODUCTS Corporation
908 AVILA, LOS ANGELES, CALIF.
Pat. 2333273



Engine Room of New Bern's Municipal Power Plant



New Bern Installs SIXTH Superior Diesel to meet increased power demand

New Bern's growing population made so many demands on the municipal power supply that city officials had to increase the plant's capacity by 20%, less than three years after it was originally placed in operation.

The decision to add another Superior Diesel was a logical one because the service records of the original five Superiors had confirmed the promised economies in fuel cost and maintenance expense. The sixth unit is an 8-cylinder supercharged engine developing 1440 HP and directly coupled to a 1000 KW generator.

In the performance records for power generation throughout the U.S.A., there's conclusive proof of the economy and dependability you can expect from an investment in Superior or Atlas Diesels.

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LOCK JOINT serves the SOUTH

IF YOU'RE FROM THE SOUTH . . .
specifically Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Kentucky or Tennessee . . . our plant at Columbia, South Carolina, is ready and waiting to serve you. This Columbia plant, the fourth of our up-to-date permanent pressure pipe manufacturing yards, is equipped to produce Lock Joint Prestressed Concrete Cylinder Pipe in diameters from 16" to 48", designed for any pressure common to water works practice. The plant's central location in the Southeast makes it possible to deliver the completed pipe speedily and economically throughout this area.

IF YOU'RE FROM ANY OTHER PART OF THE COUNTRY EAST OF THE ROCKIES . . . our three other permanent pressure pipe plants located at Wharton, N. J.; Detroit, Mich.; and Turner, Kansas, stand ready to provide for your complete Reinforced Concrete Pressure Pipe requirements. All these plants are equipped to manufacture the most carefully designed modern Concrete Pressure Pipe in a large range of standard diameters, and have facilities to handle any contract however large or small.

SCOPE OF SERVICES—*Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains 16" in diameter or larger, as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.*

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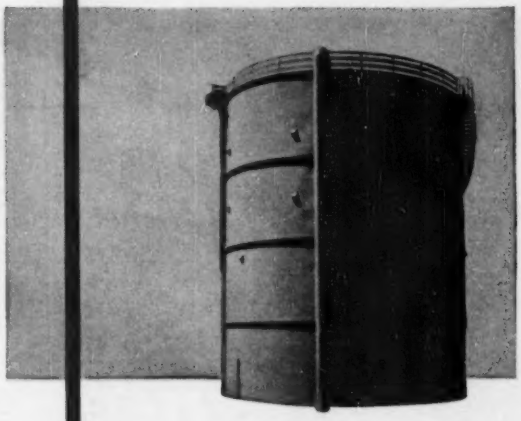
The Wiggins Gasholder has a remarkably simple design. It has none of the complicated mechanisms of old-type gasholders. No materials that can be harmed by weather.



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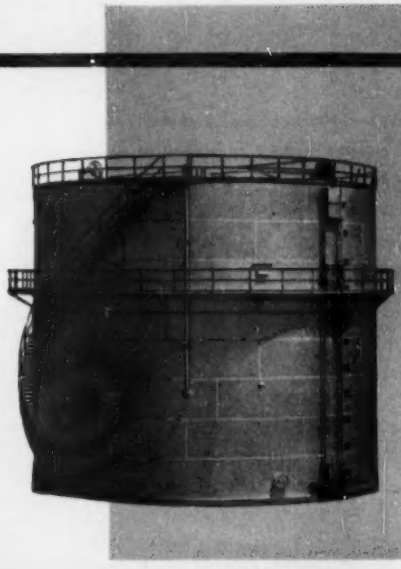
Wiggins is the ONLY gasholder that uses no water, no tar, no grease. Wiggins assures no weather worries, no operating costs, no maintenance problems.



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Wiggins is the only gasholder with an absolutely dry, frictionless seal— gas-tight and impermeable.

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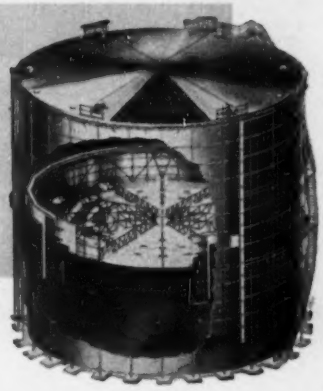

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GENERATING SETS

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The world's first parking meter installation was in Oklahoma City in 1935. It was a Park-O-Meter installation. The success of this pilot installation ushered in a new day of scientific traffic control for cities all over the United States . . . in Alaska . . . and in Canada. And *every day* more cities are choosing Park-O-Meter . . . *there must be a reason!*

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Park-O-Meter continues to prove itself the first choice of modern American cities . . . *and there is ample reason.* Park-O-Meter offers more modern features than any other meter. It is more adaptable to changed and changing needs. It is accurate . . . never cheats the public . . . never cheats the city. Study Park-O-Meter before you obligate your city for parking meters.

If your city has no system of metered parking . . . if yours is an obsolete or inadequate system . . . if you have any unsolved parking problem . . . or if you have an off-street parking problem, our traffic consultants will cooperate in finding an answer without cost or obligation on your part.

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Twin rigs take debris from sewer to street in one operation.

Mounted on four wheel trucks—safer—eliminates lifting to position over or pull away from manholes—safer tandem towing.

All Controls at Working End—keeps operator out of passing traffic—allows full vision of work.

Built-in Gear Reduction Ratio—allows better use of engine for pulling power and bucket travel speed.

Fully Automatic Safety Clutch—instant acting—avoids damage to tiles and machines.

CHAMPION CORPORATION
Hammond, Indiana

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Please send information on new OK Champion Power Sewer Cleaners.

Name.....Title.....

Address.....

For *Economical* Maintenance

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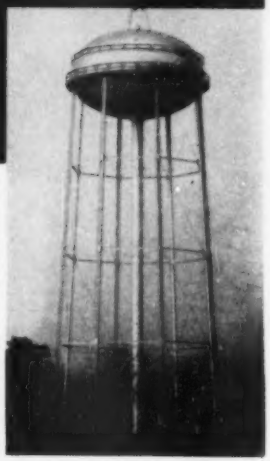

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Write for the latest Cole catalog—"TANK TALK"

Established 1854

R.D. COLE MFG. CO.
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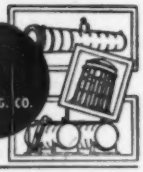

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NO! It's not necessary . . . and it's not sanitary, either.

EVERYBODY knows those regular trips to the garbage pail, and the city garbage collections that follow every few days are a "pain in the neck" to the citizen and city alike.

You city officials know only too well the personnel and maintenance headaches that go with garbage collections by city trucks. Above all, the old-fashioned method of collection, along with maintenance of garbage dumps and incineration, is costly.

This expense is passed on to the citizens in the form of higher taxes or fees.

As a civic official, responsible for the health and progress of your community, your active support for *community-wide* installations of General Electric Disposalls® would be a great . . . and certainly popular . . . service to all citizens.

The G-E Disposall provides a quicker, healthier, and far more economical way to get rid of garbage. Just scrape all food-waste into the drain opening; just lock in the safety Twistop control, turn on the faucet . . . and, presto! The Disposall shreds food-waste into tiny bits and washes it away through an *already existing* sewer system. The G-E Disposall is specially designed for use with septic tanks, too. Actually helps keep drain lines clean.

Years of practical experience have proved dependable operation on present sewer systems. And, even 100% installations in a community add less than 2% to the total sewage flow.

Let us send you this booklet

Let us send you "Dad, What Was Garbage?" an authoritative booklet that answers your questions on this great new advance in sanitation. Write General Electric Company, Louisville 2, Kentucky.

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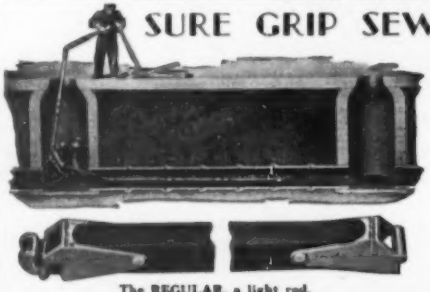
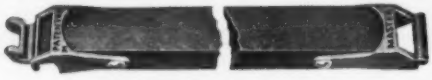
SURE GRIP SEWER RODS and ACCESSORIES



The REGULAR, a light rod.
Fit stock 1¼ x 1¼ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



The MASTER, a heavy duty rod.
Fit stock 1½ x 1½ inch square.

Write for catalog on complete line of sewer cleaning equipment.

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Double-Faced Accident Prevention Signs
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Pacemaker in performance, the Model "40" Sweeper is the culmination of 30 years of experience in designing and building motor sweepers. Model "40" sweeping is low-cost sweeping. Every mile of clean-swept street and gutter behind a Model "40" represents substantial savings in dollars and cents—savings over antiquated hand methods of pan and broom—over less modern types of sweepers with cumbersome and costly elevators and conveyors. Fast, clean-sweeping, superbly maneuverable, the Model "40" answers the problems of state and municipal cleanliness in parks, streets, alleys, and on highways. From end to end it's built to do a cleaner, better job than any sweeper ever manufactured.

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Thousands of Allis-Chalmers HD-5G 1-yd. front-end shovels are making history . . . handling an endless variety of excavating and material handling jobs faster, at lower cost than ever before.

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A NEW ERA OF TRACTOR USEFULNESS

Pioneering New Methods — Tracto-Shovels are blazing new trails in excavating and material handling . . . doing traditional jobs in a new, better way.

A Size for Every Job — Faster, more efficient operation; at lower equipment investment.

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14 different attachments

Standard buckets, heavy-duty rock buckets, rock forks, bulldozer blades, light materials buckets (up to 7 cu. yd.) . . . plus other attachments for some models.

1 yd. HD-5G	2 yd.* HD-9G	3 yd.* HD-15G	4 yd.* HD-20G
40 Drawbar hp.	72 Drawbar hp.	109 Drawbar hp.	Hydraulic torque converter drive
Dumping height (bucket hinge pin): 9 ft., ½ in.	Dumping height (bucket hinge pin): 11 ft., 4 in.	Dumping height (bucket hinge pin): 12 ft., 8 in.	175 net engine hp.
Total weight: 16,200 lb.	Total weight: 29,900 lb.	Total weight: 40,000 lb.	Dumping height (bucket hinge pin): 13 ft., 5 in.
			Total weight: 61,600 lb.

Advantages
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World's Largest Front-End Shovel
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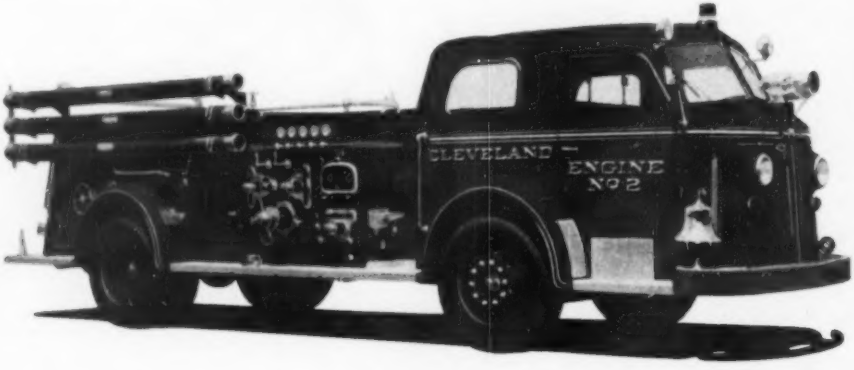
6 *New* 85 ft. All-Steel Aerials

3 *New* 1250 g.p.m. Triple Combination Pumpers

1 *New* 1500 g.p.m. Triple Combination Pumper

are in active service. Delivered in the past six months, these American-LaFrance cab-ahead-of-engine aerials and pumpers are part of a modernization program of the Cleveland Fire Department, inaugurated by Fire Chief Cain.



• *American-LaFrance 1500 gpm pumper. All pumpers equipped with discharge gauges for each outlet.*

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• *Cleveland's new American-LaFrance Aerials and Pumpers.*

These *Extra Values* Are Provided Only by AMERICAN-LAFRANCE

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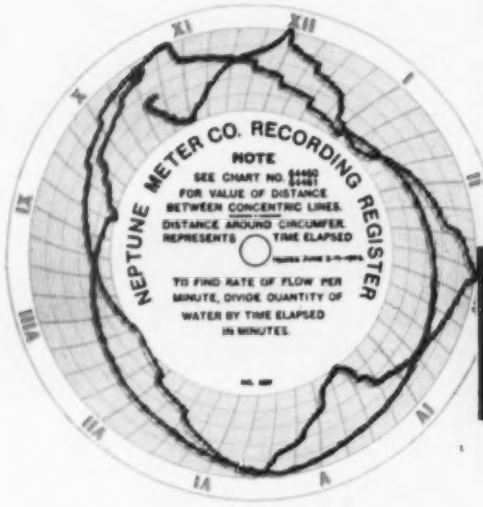
- All-steel aerial ladder—full hydraulic power for all operation.
- Greater ladder stability—automatic safe load visual indicator.
- TRIPLEFLOW 2 stage centrifugal pumps—American-LaFrance built.

• *For Details of These Extra Values and MANY MORE, Write for Illustrated Booklet.*



PROOF!

that you can get more revenue from a sensitive accurate meter

This chart is an actual record taken from a house with a toilet leak of about 1/10 gallon per minute. It proves the value of an accurate sensitive meter—because a meter not sensitive enough to register at this low rate of flow would never have picked up this leak

—and the water company would have lost the revenue on approximately 149 gallons per day, or about 13,500 gallons per quarter. Instead of 1/10 gpm, leakage might have run as high as 1/3 gpm, with that much more loss to the water company.

Moral — Keep your water meters sensitive by keeping them in good repair; and you will get maximum revenue from your water.

NEPTUNE METER COMPANY
50 WEST 50th STREET • NEW YORK 20, N. Y.

237

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PANAMA CITY USES

Construction-Management Contract

TO BUILD ITS NEW SEWAGE-TREATMENT PLANT

WHEN PANAMA CITY, FLA., decided to spend $3,500,000 in expanding its water and sewer systems to keep pace with its rapid growth, it retained two professional organizations to help with the job.

The first was the engineer. The firm selected was Smith and Gillespie of Jacksonville, Fla., a group of engineers well known in the sanitation field in the Southeast.

The second was the builder. Instead of asking for bids and giving the contract to the low bidder, the City Council selected an organization in whom it had confidence and which had built this type of project before. The organization retained was the one owned by Marvin R. Boyce, of Clearwater, Fla. Actually, it retained Mr. Boyce himself to be the construction manager.

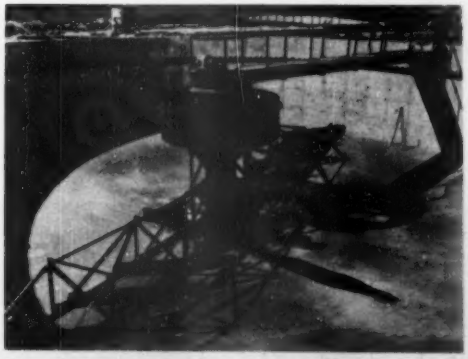
Under the terms of this construction-management contract, Mr. Boyce agreed to build the project for less than the engineers' estimate, and was asked to place a $300,000 bond to guarantee this performance. The payment to him is based on 85% of the engineers' estimate of the total cost. Of this, he is to get 15%.

The projects included in the overall project cover additional water supply; improvements to plant and pumping facilities; added water distribution mains and laterals, as well as a complete revamping of the sewage-collection system and the construction of a modern high-rate filter-treatment plant capable of serving a population of 30,000.

This method was adopted primarily because of unsettled world conditions. A contract such as this could be prepared quickly; an organization could be formed with enough equipment to do the job promptly, and with "know-how" enough to work with the peculiarities of sewage treatment with confidence. Mr. Boyce's familiarity with the sanitation field can be attested to by his long-time service as secretary-treasurer of the Florida Section of the American Water Works Association. The progress he is making indicates that the sewerage system will be operating in 18 months instead of the estimated 2½ years, and that the cost will be $2,800,000 instead of the estimated $3,500,000. These savings, incidentally, are going to be used to build more sewer extensions.

Construction Problems

The project has been far from easy to build. In the first place, the need for it became serious just as the famous "cold war" began to generate a little heat, and just as those who have charge of allotting materials began to adopt a dim view of sewerage projects that took critical materials from the construction of guns, ammunition, and atomic-energy facilities. So as its first step, Panama City submitted a brief arguing for the need of the project to the National Production Authority. This brief con-

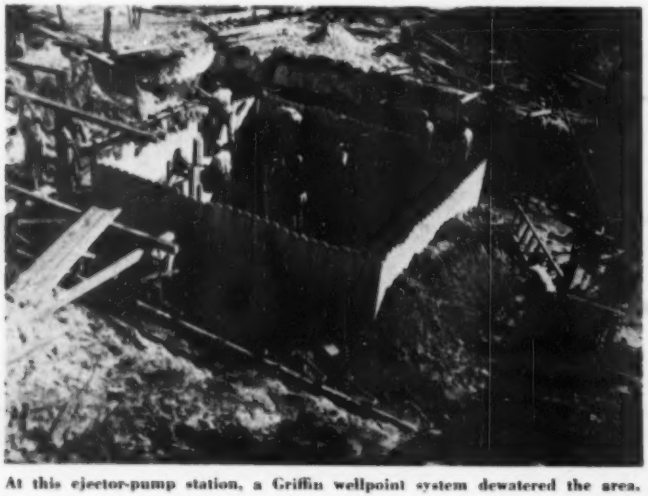


One of the secondary basins (equipped with a Dorr clarifier) that was installed at Panama City's new plant.

The slag for the two trickling filters, each 85 feet in diameter, was placed in this manner.

Vitrified-clay underdrains form a herringbone pattern in the sludge-drying beds.

Two lines had to cross this bayou; one, an 18-inch gravity main, the other, a 10-inch force main. The pipes were floated across on drums and then submerged.



At this ejector-pump station, a Griffin wellpoint system dewatered the area.

tained letters pointing out the urgency of the sanitation improvement from David B. Lee, Director of the Florida State Board of Health; Dr. W. R. Stinger, Bay County Health Officer; an official of the paper industry located there; Mr. T. E. Smith, County Superintendent of Schools; Colonel B. T. Kleine, Commanding Officer of the Tyndall Air Force Base located there, and by the City Manager. This brief, together with a personal trip to Washington by the interested officials, resulted in the city's being granted the needed priority.

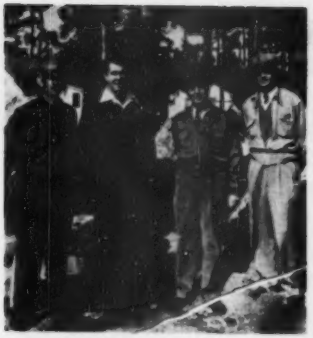
Overflowing Cesspools

From a health standpoint, the need was important. Panama City had a small sewerage system able to serve 6,000 people. But during the war and post-war period, the city had grown to nearly 30,000 people. The unsewered area had to depend on septic tanks that had to leach into a tight soil, not suitable for easy seepage. Consequently, the soil became saturated with polluting filth and the cesspools frequently overflowed. The small sewerage system discharged raw sewage into St. Andrews Bay and polluted it so heavily that it was becoming dangerous for bathing purposes and shellfish harvesting.

The sewerage-collecting system presented construction difficulties, since the engineers could not rely solely on gravity in the way that they can in other parts of the country. Panama City is located in an area that has many small hills and hollows. So the engineers had to make the system drain to each of the hollows and then supply pumping stations to bring the sewage to the point of treatment.

In all, 25 pumping stations were built. Three of these are small Yeomans Ejector stations that have to pump only between 100 to 300 gallons per minute. There are 15 others whose size varies from 300 to 1,200 gallons per minute. These stations each have two Fairbanks-Morse bladeless impeller pumps, and each has a small, manually cleaned grit chamber, so that the first step in the removal of the solids occurs at the pumping station. The remaining seven stations have three pumps each, and have capacities varying from 975 to 4,320 gallons per minute. These 25 stations draw from gravity systems that use approximately 450,000 feet of W. S. Dickey and Oconee Clay Products vitrified-clay tile jointed with GK compound. The tile varies in diameter from 8 to 24 inches. When the tile had to be placed deeper than 12 feet, extra-strength tile was used. The force mains connecting the stations to the plant require the use of 80,000 lineal feet of United States Pipe and Foundry cast-iron pipe. This is lead jointed and varies from 4 to 18 inches in diameter.

One of the difficult portions of this



The engineer-builder team responsible for the work: left to right, J. E. Lamm, chief inspector, and A. J. Birchall, resident engineer, for Smith and Gillespie;; Marvin Boyce, president, and Malcolm A. Moye, Jr., general superintendent of the Boyce Co.

force-main construction was that of bringing it across a bayou. The channel crossing required 750 feet of pipe placed 8 feet below the channel bed or 20 feet below mean-low water. Placing this underwater pipe is one of Mr. Boyce's specialties. In this case, he used U. S. Pipe and Foundry, ball-and-socket pipe, 18 inches in diameter. The pipe was held in position over the dredged trench by oil drums held in place by a cable, and was lowered slowly by gradually cutting the oil drums loose. The entire crossing required 12 working days.

Biofiltration

The plant that Smith and Gillespie designed uses the Biofiltration-treatment system and is capable of handling 3,000,000 gallons of sewage per day. Since grit has been removed from the sewage at the pumping stations, the plant does not have to provide this facility. Instead, the sewage flows to a diversion box that directs it to either of two 60-foot Dorr clarifiers. From here the settled sewage goes to two trickling filters, equipped with Dorrco Distributors, each 85 feet in diameter, and from there to two Dorr final clarifiers each 60 feet in diameter. The purified sewage then is discharged to St. Andrews Bay.

The sludge from the clarifiers is transferred by two Marlow duplex pumps to the digesters. Each of these is 60 feet in diameter and is equipped with a Pacific Flush Tank cover. Before the sludge enters the tanks, it passes through a heat exchanger that brings it to optimum temperature, and uses for its source of heat the gas generated in the digester. The digested sludge goes to sand-drying beds measuring 320 feet by 50 feet.

The pump house not only features a modern office, but has all the latest equipment for all laboratory tests required for the operation of the plant. The chlorinator, supplied by Wallace and Tiernan, is also located in the pump house. This large gas machine automatically sterilizes the plant effluent for final purification.

Recirculation of the sewage is by means of three 3,000-gpm vertical pumps supplied by Fairbanks-Morse.

The program was initiated and has been carried out by the City Commission: Carl R. Gray, Mayor; Frank Nelson; Howard Zediker; Abbott Browne, and Collas Thomas. H. L. Berkstresser is Water and Sewer Superintendent. M. A. Moye, Jr., is construction superintendent for the Boyce Company, and A. J. Birchall, Jr., is resident engineer for Smith and Gillespie.

Small Communities Benefit From Slum-Clearance Program

LARGE CITIES need not be the only beneficiaries of the slum-clearance and urban-redevelopment program authorized by Title I of the Housing Act of 1949. This is evident from the recent group of summaries of local-redevelopment programs issued by the Housing and Home Finance Agency.* Included among the progress reports are the redevelopment efforts in Shelton, Conn. (pop. 12,400); Danville, Ill. (pop. 37,900), and Dover, N.H. (pop. 15,900). Other cities covered are San Juan, Mayaguez, and Ponce, Puerto Rico; Montgomery, Ala.; New Orleans; San Francisco, and Little Rock.

Shelton was the first city in Connecticut to get a preliminary advance, receiving $5,500 from the HHFA to help finance studies of Shelton's slum areas, and a reservation of $56,240 of capital-grant funds to be used to help the municipality absorb the write-down of cleared-land costs needed to offer sites at prices or rentals in line with planned new-use values. Concern with the central business district is the heart of Shelton's redevelopment problem.

Danville has selected for its slum-clearance and redevelopment studies an irregularly shaped area of approximately 3 square miles, containing the most intensive sections of blight as well as the worst housing in town. One area of dilapidated houses located along a creek on bottom lands subject to flooding is expected to be cleared, with displaced low-income families rehoused in 300 units of low-rent public housing to be provided by the Danville Housing Authority on open land near the proposed slum-clearance site and on open land at the edge of the city. The rehousing of other families is expected to be eased by the low prices of improved lots, a number of them fronting on sewer and utility lines being priced as low as $250.

The Danville program is proceeding in accordance with a Plan of Land Use prepared in 1950 by the Danville Plan Commission. The HHFA has made a reservation of capital-grant funds in the amount of $333,970, and has also approved a preliminary advance of $16,400 to the city to help finance the surveys and studies needed.

Dover's most pressing redevelopment problem stems from the fact that one of its major retail-business streets is virtually surrounded by neighborhoods of substandard housing which are forcing expansion of retail trade in the direction of the town's better residential section, and thus extending the blight.

Three areas have been selected for further study as potential slum-clearance and urban-redevelopment projects. On one of these, since the start of the redevelopment studies, the Dover Housing Authority has received approval for a 125-unit low-rent public-housing development to house low-income families displaced from the areas that would be cleared and redeveloped. The two other areas, although predominantly residential in nature, have mixed commercial and industrial land uses and are expected to be replanned for new commercial and industrial purposes, as well as to provide new traffic routes and badly needed parking facilities.

For its program, Dover has received from the HHFA a capital grant reservation of $102,000, and approval for a $10,000 planning advance for further surveys of the three slum areas.

* *Summaries of Local Redevelopment Programs*, Series II, February 1952. Housing and Home Finance Agency, Office of the Administrator, Division of Slum Clearance and Urban Redevelopment. Washington, D. C. 22 pp.

To Prevent Rust— A Correction

RUST PREVENTION in water-tank trucks was discussed in the February 1952 issue of THE AMERICAN CITY by Einar E. Aamodt, engineer with the United States Forest Service, Roscommon, Mich.

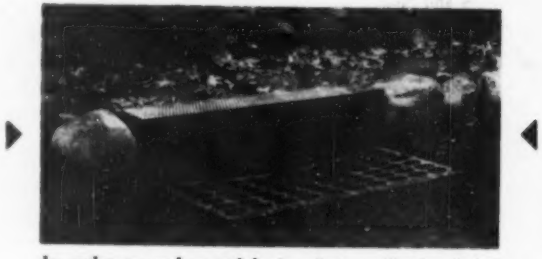
The article reported the use of Inertrol as one of the products used. This should, of course, have been *Inertol*, a product made by *Inertol* Company, Inc., 480 Frelinghuysen Ave., Newark 5, N. J.

Some Small-Town Ideas

that work well in municipal engineering

By E. ARTHUR BELL, *Borough Engineer, Essex Fells, N. J.*

This street is in its fifteenth year of service, but shows no sign of distress.



In order to make catch-basins drain well, the design used in Essex Fells drops the lower inlet grating 5 inches below street grades and then lets gravity do the work.

Although this road looks like a country lane, it wears like an arterial highway. Note the dry-laid fieldstone curbs that add to the suburban atmosphere.

WE IN THE SMALLER COMMUNITIES always have been grateful for the pioneering work that often takes place in the engineering departments of the large cities. Certainly, when a process is tried on the grand scale, then inherent weaknesses often are uncovered that only would be annoying but never completely disclosed when we in a small community try it.

However, I believe that the need to be resourceful and use to the utmost what you have around you makes it possible for us small-town city engineers to present a few practices that not only will aid our contemporaries in other small communities, but also will give our big-city colleagues something to think about.

The Community

First of all, let me describe Essex Fells briefly. It is a suburban community in the New York metropolitan area. It has a population of about 2,000, and is wholly residential. In a big city, one can have highly specialized departments, and may spend half a day running from floor to floor trying to find out who has charge of cleaning catch-basins—whether it is the street department, the street-cleaning department, the refuse department, or the sewer department. But in Essex Fells, you would have no such trouble. To be Borough Engineer means that you are Superintendent of Water Supply, Superintendent of Sewerage, Superintendent of Street Construction and Maintenance, Superintendent of Street Cleaning and Snow Removal, Superintendent of Parks and Shade Trees, and, in this case, Deputy Fire Chief. For a man who truly likes the engineering field, it is a diversified and stimulating experience.

One-Course Street Surface

Our practice in street construction ought to be useful to those cities with new housing developments who are looking for a low-cost, practical residential street. For a long time, everyone has realized that street problems aren't difficult if good drainage is supplied, so when we build a street, we build with that uppermost in our minds. On a well-drained sub-base, we can use a 6-inch water-bound macadam and a 2-inch single-course surfacing. This surfacing consists of a fairly open mix with bitumen con-

tent between 4½% and 6½% cutback with a naphtha liquefier amounting to between ½% and 1% of the total mix. This is heated just a little when mixed and is laid relatively cold. As a matter of fact, we have laid some just after sweeping snow away—and it stood up with no trouble. It can be laid easily in a standard Barber-Greene paver. The composition of the mix is as follows.

Screen Size		Per cent by weight	
Passing	Retained on	Min.	Max.
1¼ inch	1 inch	0.0	35.0
1 inch	½ inch	35.0	70.0
½ inch	¼ inch	10.0	25.0
¼ inch	#10 screen	5.0	15.0
#10 screen	#30 screen	3.0	10.0
#30 screen	#80 screen	2.0	4.0
#80 screen	#200 screen	1.0	5.0
#200 screen	.....	2.0	6.0
Total retained on #10 screen		70.0	85.0
Liquefier		0.5	1.0
Hydrated lime		0.5	1.5
Bitumen content		4.5	6.5

We will choke this surfacing with dry, ¼-inch broken stone to keep the surface from being too open. The entire surface gives us a good, dense, non-skid surface. We have been using this method since 1937, and I personally feel that this is long enough to merit confidence in it.

Incidentally, our people like a fieldstone curb rather than a concrete one, since it adds to the rural atmosphere of the community. We have had good luck simply placing the fieldstone on the earth without a concrete foundation and without mortar joints. Once the earth is seated solidly back of them, they never move.

Storm Sewers Laid on a Curve Are Satisfactory

When we build storm sewers, we violate a lot of principles that others adhere to strictly. We aren't afraid to lay them on a horizontal curve, we will lay them on a vertical curve, and we build our storm-water inlets so that we don't need a lot of manholes. We maintain a minimum grade of ½% in the storm sewers and can worry a storm sewer around a curve with a radius as sharp as 100 feet. One reason for this practice can be credited to the sewer-cleaning manufacturers. We have a Flexible Sewer Rod rig, and it negotiates these curves without any complaint.

As far as sanitary sewers are concerned—and we don't have any "combined" sewers, we don't make our sewage plant treat storm water if we can help it—we follow the book to the letter, and in some respects do even better. All sewer lines are laid to straight line and grade, and we use lead-jointed cast-iron pipe for the sewers themselves.

For street drainage, we like a self-cleaning drop inlet. We don't have any patience with those so-called traps in catch-basins to catch debris. They just cause a lot of extra work, and succeed only in breeding mosquitoes (and I never found anyone in Essex Fells who was interested in a mosquito as a pet).

Essex Fells has no fears about storm sewers laid on a curve. Modern sewer-cleaning equipment, it finds, works as well on curves as on straight runs.

Our catch-basins are between 3 and 4½ feet deep, and the storm sewers pass directly through them, on one side of the street. A catch-basin on the opposite side of the street feeds to the one on the sewer main by means of a lateral. You will note that the sewers themselves can be shallow and easily built.

To get good drainage into the inlet, we drop the inlet grating 5 inches, and slope the street surface to this lowered elevation in 6 to 8 feet. We use a cast-iron frame with a curb piece having a total weight of 1,150 pounds. If the street is on a grade, we may "fatten" the pavement surface a little on the downstream side of the inlet to discourage water from flowing past the inlet.

These are all simple operations that work well in our community and save us money. And they ought to work well in any community, large or small, that is building streets and sewer facilities for residential purposes.

Government Units in U. S. Decline to 119,465 in 1951

SINCE 1942 there has been a decline of 23% in the number of governmental units in the United States; in 1951 there were 119,465—fewer by 36,000 than in 1942. The most striking facts recorded are that by 1951 38,127 school districts had been eliminated, and "special districts" had increased by 43.4%, from 8,299 to 11,900. These are among the findings of a special survey on "Governments in the United States in 1951" published in March by the Bureau of the Census.*

There were 48,964 local governments other than school districts, the Federal Government, and the 48 state governments in 1951. These consisted of 17,338 townships, 16,677 municipalities, 11,900 special districts, and 3,049 counties. Local school districts, numbering 70,452, still made up three-fifths of the 1951 total.

There were 457 more municipalities in 1951 than in 1942, owing to new incorporations during the nine-year period. The term "municipalities" as used in the Census Bureau report includes all governmentally active units officially designated as cities, boroughs, villages, or—except for New England, New York, and Wisconsin—towns. Leading in number of municipalities were the states of Illinois, with 1,152; Pennsylvania, with 989; Iowa, 933; and Ohio, 898.

As for special districts, the Census report declares that there is no consistent pattern from state to state, or even within a state, as to their organization and financing. In the U. S. as a whole the following special districts existed in 1951: highway, 674; fire protection, 1,965; housing, 838; drainage, 1,934; irrigation, 582; soil conservation, 1,967; water and sewer, 881; and 3,059 functional classes such as cemetery, health, hospital, library, mosquito abatement, port, power, weed eradication, and many other types of single-purpose districts as well as the multi-purpose districts not distributed elsewhere.

* U. S. Bureau of the Census, *Governments in the United States in 1951* (State and Local Governments Special Study No. 29), Washington, D. C. 1952. 10 pp. Tables.

President Urged to Establish Housing Commission

A PROPOSAL for the establishment of a National Housing Commission has been made to President Truman by the National Housing Conference. The group of NHC officers and other public-interest-organization representatives who met with the President on February 20, pointed out that housing shortages affect major aspects of family welfare, defense, health and safety, city and regional planning, the security of the home-ownership structure, and the social and financial solvency of communities.

The group's statement declared that inadequate attention has been given to these problems. It urged "that a Commission of outstanding representative citizens be appointed by the President to appraise housing needs in terms of these and related aspects of the problem, and to make such recommendations to the President as the Commission may in the national interest consider necessary."

Cumberland, R. I., Expands Its Water System and Holds an Industry

Renegotiation of an archaic water agreement between municipality and an industry, plus new construction, results in benefits to the industry and to the people

By **EDWARD J. HAYDEN**
Town Engineer
Cumberland, R. I.

WHAT LOOKED, back in 1949, like a bad situation for Cumberland, R.I., in threatened loss of jobs for our townspeople and loss of tax revenues for the town itself, has been converted into gains for all concerned—because an industry, located in the town, has been assured of a water supply adequate for its needs.

These gains are:

1. For the wage-earners involved, the continued existence of their jobs through the provision of needed water for their employer;

2. For the employer, a guarantee of 13,500,000 gallons of water yearly at required pressures for a flat fee of $100 yearly for 20 years;

3. For a neighboring community which was supplying this industry with water, the end of an unfavorable rate agreement made in 1873 and escape from the need for a $325,000 outlay for facilities to meet the industry's water requirements — facilities on which the community would have had to pay additional taxes;

4. For the Town of Cumberland, an increase in the value of its water system from $200,000 in 1949 to a present value of $850,000, including $50,000 in replacement value of facilities given this town by the nearby community in return for installation by Cumberland of a 3,000-foot link between the ends of two mains retained by the other community.

New facilities on which we have spent $600,000 so far — besides issuing another $125,000 in bonds for further additions—make up the rest of the boost in the worth of our water system.

Our old system had only 650 services when the problem was brought to public attention in 1949. Most of these services were in a village near the extreme northwest part of town, several miles from the mill which was seeking the 13,500,000-gallon yearly supply.

Town Meeting and Town Council action quickly followed, directing me and a special citizens' commission to investigate the feasibility of supplying, from the town system, part of the lower end of Cumberland, which was served by the neighboring city.

Preliminary investigation and study showed that not only was this idea practical but that the suggested expansion might very quickly produce revenue which would exceed maintenance costs.

Archives at the Town Hall yielded records showing that a 12-inch cast-iron main, serving the mill threatened with inadequate supply, had been laid by the company in 1873 and was still the company's property. It tied in with the rest of the neighboring community's system at a point two miles to the southeast.

We discovered also that the neighboring community had, in consideration for the company's providing the main, agreed to supply the plant with water and return to the company 25% of the revenue derived from this water line forever.

Renegotiation

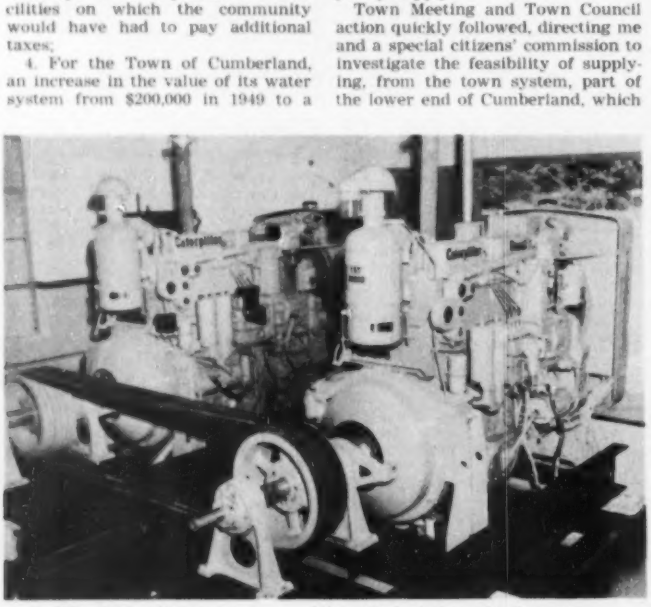
This impractical agreement had to be renegotiated in a three-way covenant between the town and the company and between the town and the city. The town agreed to install the link between the city's two mains suppiying the urban southern villages that formed a loop in the city's system. The city relinquished to the town its mains, gates, hydrants and other facilities in the affected streets.

The company gave the town its 12-inch main and in return is getting, under specified pressure, 13,500,000 gallons of water yearly for the $100 flat yearly fee. The agreement terminates in 20 years.

The net gain to the town in added value of its water system through the acquisition of the city's facilities was $50,000. Moreover, we picked up 300 new services including three industrial plants formerly served by the nearby community. The revenue from these was estimated at $9,000 a year.

This original system was supplied from a natural reservoir having a yearly capacity of 160,000,000 gallons. It included a pumping station and a 325,000-gallon standpipe. Daily water use ran to approximately 120,000 gallons. Revenue in 1949 was $11,000. Figuring $12,000 worth of extensions plus personnel and maintenance expense, operating costs hit about $20,000.

We found two very good locations for gravel-packed wells close to the industrial plant which had been seeking improved water service. We sank wells at both places but developed only one of the wells, which



The deep-well pump is powered by either of these diesel engines.

was capable of supplying 750 gallons per minute using a Peerless deep-well turbine pump.

Besides the facilities taken over from the nearby city, the following additions were obtained with the $600,000 expended.

1. The well is used on a standby basis. We built a pumping station here, equipped with two Caterpillar diesel engines and the necessary controls, and chemical-treatment facilities.
2. We installed a 750,000-gallon, Radial-cone bottom storage tank about three miles northeast of the new wells. The tank, erected by the Chicago Bridge and Iron Company, is just off one of the town's two main north-south highways, where much residential building is going on.
3. Some miles to the south, along the road where our mains parallel those we installed for the neighboring city, we built a booster station connected with the well, the tank, and the old reservoir that still gives us our water for regular normal purposes. These pumps are powered by electric motors with Caterpillar, diesel-engine standbys. They consist of three Peerless pumps, rated respectively at 650, 240, and 140 gallons per minute.

The supply from the wells can be cut into the system and pumped to the tank from this station, but our plans for the future also call for a direct line from the wells to the tank. The wells offer a big safety margin for fire fighting and a solution to summer taste problems.

4. We enlarged the original pumping station at the natural reservoir where the water is normally introduced into the system by being pumped into the old standpipe, which was built in 1935. We added a second pump and Caterpillar diesel engine at this station, retiring the old pump and engine to a standby status. The pump is a Yeomans HSD rated at 1,000 gallons per minute.
5. We installed more than 10 miles of mains ranging from 6 to 12 inches in diameter, with 90% of them with 10-inch diameters. Except for the cast-iron main laid for the neighboring city, the new mains are of cement-asbestos.

This part of the job also involved installation of 5,000 feet of copper service connections, 90 hydrants and more than 250 gate valves, and replacement of 50,000 square yards of pavement including complete repaving of the road marking the boundary between water systems of Cumberland and of the neighboring community.

The contractor also put in two pumps with electric motors, one at the old pumping station and one at the booster station, for $2,000, giving us, in all, five pumps ranging in rated capacity from 140 to 1,000 gallons per minute. These items total $28,000.

Financing

The contracts and engineering fees have totaled about $400,000 so far, the rest of the $600,000 spent being used for purchase of materials.

The bonds were sold on bids, $500,000 maturing in 30 years' interest, and $225,000 maturing in 20 years. Both required interest rates of 1.90%.

With this expansion, administration of the system passed from the old commission to my department, directly under Town Council control, which computes bills and turns them over to the town treasurer for collection.

To summarize, in about two years, from preliminary-discussion stage to completion of most of the planned construction, Cumberland expanded its water system as follows:

From 650 services including one large industrial plant to more than 1,200 services including four sizeable industries;

Storage capacity has increased from 325,000 gallons to 1,075,000 gallons;

Yearly firm capacity has been raised from 160,000,000 gallons to 525,000,000 gallons;

Daily water-use has risen from 120,000 gallons to amounts ranging between 250,000 and 325,000 gallons, totaling 109,000,000 gallons yearly or only about 20% of the yearly capacity;

Revenue has risen from $11,000 yearly to more than $20,000 yearly;

Operating costs, including service extensions, have gone up from $20,000 yearly to only $23,000 yearly, also including service extensions;

Value has been boosted from $200,000 to $850,000, besides bonds issued for future additions amounting to another $125,000.

Bringing many square miles of new territory within reach of hydrants, beside more than tripling the volume of water that can be made available in an emergency, the expansion is already paying off for the townspeople in terms of reduced insurance rates. I have been told that rates in one fire district have been cut from 55 cents to 18 cents per $100.

The new tank provides 750,000 gallons of reserve water.

The new town main is hooked into a main formerly part of the system of a neighboring city. A Mueller gate valve has been used at this point.

The blower building for the new plant exhibits clean, trim, dignified lines.

Philadelphia Likes Modified Aeration

The rebuilt Northeast sewage-treatment plant requires only half the air to provide purification that plants using activated-sludge-treatment normally use. The plant removes a threat of pollution to the city's water intake

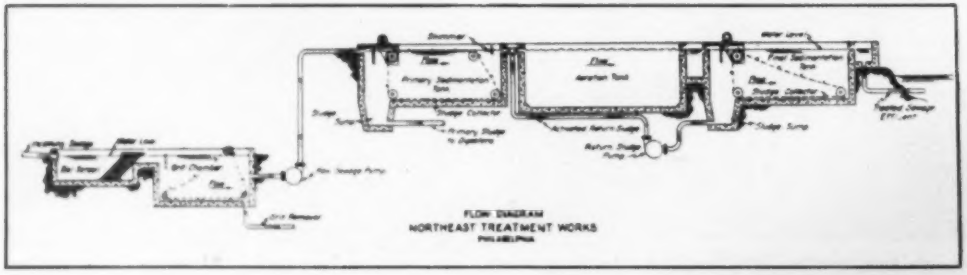
THERE'S BAD NEWS AHEAD for comedians; and Philadelphia's engineering departments in charge of various public works activities are preparing it. For years, these humorists have gratefully used the Quaker City water-supply line as a happy punch line whenever their own line of laughs has faltered. Philadelphia's famous "Chlorine Cocktail" has meant groceries on the table to those who make a living by making people laugh.

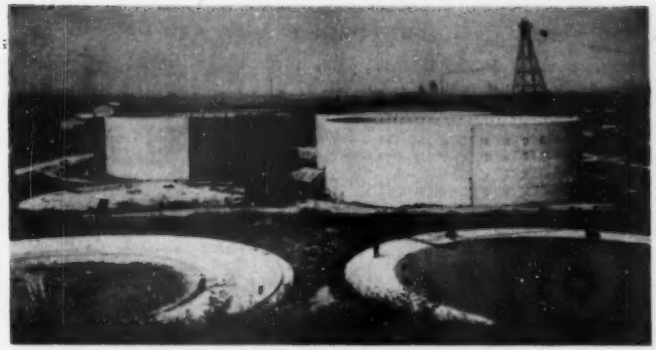
But the punch line is getting weak. It has been weakened primarily by the city's aggressive program of water treatment that is being reinforced today by Philadelphia's sewage-treatment program, which is helping to remove a substantial portion of the polluting material from the Delaware River. The rebuilt Northeast Plant sets the tempo for this entire program.

Imhoff Tanks Replaced

The original Northeast Plant was a veteran of World War I, started before the war, suspended during the war, and completed in 1923. It provided primary treatment only, through the use of a battery of Imhoff tanks. It had a hydraulic capacity of 60,000,000 gallons per day. At the time, the city's water intake was comfortably located upstream, away from any pollution that the effluent from these tanks might discharge. However, the city has grown enough so that the plant was forced to receive overloads of more than 50%, with the deterioration of the quality of the effluent accompanying the increased volume of sewage. The tidal currents promptly backed this added pollution up the Delaware and created the difficulty in the intake area.

With the need established, the next decision was the treatment required. Consultation with the Interstate Commission on the Delaware River Basin and the State Department of Health disclosed that a treatment that would reduce the suspended solids and BOD count from 200 ppm to 50 or less would provide the needed purification. This required something more thorough than primary sedimentation. The Philadelphia Department of Engineering se-





In this construction photo digestion tanks are being erected. The foundations and core walls are built first, then the walls are wound with wire to give them a comprehensive strength great enough to overcome the stress formed by the sludge when the tank is full. The wires are then covered with gunite concrete.

Although this passageway somewhat resembles one that might be described in a murder mystery, it actually is the influent tunnel to the new plant.

lected "modified aeration" as a compromise between primary treatment and activated-sludge treatment.

In this case, "modified aeration" means that the plant would provide primary settling, aeration to a lesser degree than the activated-sludge treatment provides, and final settling. In most activated-sludge plants, aeration requirements are 0.005 cubic foot per ppm of BOD removed. In this case, the 150 ppm of BOD removed would mean at least 0.75 cubic foot of air supplied per gallon of sewage, however, this plant has modified the requirement so that air requirements will range between 0.3 to 0.5 cubic foot per gallon.

Other than this, the plant follows a well-tested pattern. The plant uses the existing bar screen and grit chamber, delivering the sewage to the primary settling tanks. There are four of these tanks, each rectangular, and divided into seven channels, with longitudinal and cross-collecting sludge-removal equipment.

Settling and Aeration Tanks

The primary settling tanks consist of four basins having seven channels in each basin. Each tank is 250 feet long, 125 feet wide, and 10 feet deep, and is equipped with Link-Belt Straitline collectors for the sludge and scum. The detention time in the primary tanks is 1.8 hours. From here, the sewage proceeds to the aeration tanks. These are also divided into four units and receive the sewage through submerged wiers, five feet long. There are two wiers in each unit. Air is delivered to the tanks by swing diffuser tubes. These are set two feet above the bottom of the tanks and are connected to the main air line by wrought-iron pipe. The final tanks receive the aerated sewage and allow the humus to settle out, and the final effluent then flows to a favorable, selected outfall in the Delaware River. About 15% of the humus is returned to the aeration tanks.

Each of the four aeration tanks has four channels. Each tank is 410 feet long, 21 feet wide, and 15 feet deep. Their design is based on a detention of 2½ hours and on 0.3 cubic foot of air per gallon of sewage.

Air Diffusers

The tanks have two types of air diffusers. Part are ceramic, furnished by the Carborundum Company; part are Saran-wrapped stainless-steel mandrels supplied by the Chicago Pump Company.

The secondary sedimentation tanks consist of four tanks, each 112 feet long, 70 feet wide, and 13 feet deep. These also are equipped with Link-Belt collectors and have a detention time of two hours.

Prestressed Concrete Digesters

Digestion received special attention from the designers. The Philadelphia plant was one of the first to use prestressed concrete in the construction of these tanks on a large scale. The plant uses eight such tanks, and the bidders were offered their option of building to a prestressed design or to a design using unstressed concrete. In every case, the bidders selected the former. The tanks all have floating covers.

Philadelphia engineers have installed a new type of equipment for sludge heating. Sludge gas and air at a combustion temperature of 2,400°F. are discharged directly into the sludge through stainless-steel nozzles. Tests on the equipment, which is just about ready to be placed in operation, indicate that the exhaust heat will be about 170°.

The tanks are 110½ feet in diameter, inside, and are 30 feet deep at the sides. The conical-shaped bottoms provide an added 5½ feet of depth at the center. Each digester has a volume of 2,420,000 cubic feet. Six will be used for primary digestion and two for secondary digestion.

The designers gave special attention to sludge pumping, with the result that the pumps used represent those manufactured by the Carter Pump, Chicago Pump, Fairbanks-Morse, and Worthington Pump companies. Six "scrupeller" pumps handle a portion of the primary sludge, and are able to pump 175 gallons per minute against a 38-foot head. The balance of the primary sludge is transferred by two four-inch Duplex-plunger pumps whose capacity is 120 gpm against a 100-foot head. There are six return sludge pumps. Four are 16-inch centrifugals, each with a capacity of 5,000 gpm against a 30-foot head; and two are 12-inch centrifugals, pumping 2,500 gpm against the same head. To pump the cold sludge through the heat exchangers, the plant uses three centrifugals, each with a capacity of 175 gpm against a 38-foot head. To transfer the heated sludge to the digesters, the plant uses two centrifugal pumps rated at 350 gpm against a head of 44 feet. In addition, four 5-inch centrifugal pumps move the sludge from tank to tank; these pumps have a capacity of 1000 gpm against a 45-foot head.

At present, the plant delivers the sludge to lagoons nearby. The city has lagoon capacity for eight years.

Digester-Gas Use

Gas from the digestion tanks is stored in a spherical gas holder, and is used to provide heat for the heat exchanger and also to heat the blower building.

The plant is somewhat unusual in that it does not use the sludge gas for power. However, when the costs were added together, the purchased power came out ahead. Sludge gas is used for heating the sludge in the digestion tanks and for heating the various plant buildings. Ultimately, the city hopes to abandon the coal-fired heating units at the plant.

Never before has mankind been able to surmount tremendous natural barriers with such large-span and graceful bridges. New engineering design plus a better understanding of foundations has made this possible

This slim, powerful-looking structure, known as the Sando Bridge, is located in Sweden.

By D. B. STEINMAN
Consulting Engineer
New York City

IN RECENT YEARS, new frontiers of unprecedented span-lengths have been opened. The world's record span-length for suspension bridges has been more than doubled, from 1,750 feet in the Philadelphia-Camden Bridge in 1926 and 1,850 feet in the Detroit-Ambassador Bridge in 1929, to startling new records of 3,500 feet in the George Washington Bridge in 1931 and 4,200 feet in the Golden Gate Bridge in 1937. The world's record for steel arches was increased from 977½ feet in the Hell Gate Arch Bridge in 1917 to 1,650 feet in the Sydney Harbor Bridge in Australia in 1932, and 1,652 feet in the Bayonne Bridge over Kill Van Kull in 1931. The world's record span-length for concrete arches was increased from a span of 450 feet at Annecy, France, in 1928 to 866 feet at Sando, Sweden, in 1943.

Never before in the history of bridge engineering have such amazing strides of progress been recorded. Length of span is one of the measures by which bridges are judged, since it provides a convenient overall index of related advances in the art, including improvements in design, theory, economics, new materials, new bridge types, and methods of erection.

Triumph of the Suspension Bridge

A generation ago, the cantilever type was dominant. The famous Quebec Bridge, completed in 1917 after two historic erection catastrophes, held the world's record span-length of 1,800 feet. Since then, however, with improvements in the science and art of suspension-bridge construction, the cantilever bridge has dropped out of the race and has yielded its previously claimed supremacy to the suspension type. The world's seven longest spans are now suspension bridges.

This giant and graceful bridge is the proposed crossing for the Messina Strait in Italy.

Plans have been made for monumental suspension bridges of still longer spans, including a span of 4,620 feet over the Narrows at New York and a span of 5,000 feet over the Strait of Messina between Italy and Sicily. A generation ago, the feasibility of a span of 3,000 feet was seriously questioned. Now we can state with confidence that suspension bridge spans up to 10,000 feet are practicable and may be expected.

Mastery of the Aerodynamic Problem

In 1940, with the startling destruction of the 2,800-foot span Tacoma Narrows Bridge by catastrophic amplification of aerodynamic oscillations, the profession was dramatically reawakened to the aerodynamic problem as affecting the safe design of suspension bridges. Similar failures with smaller spans had occurred a century earlier, and had remained a mystery; but now better tools of research and analysis were available for mastery of the problem. By combining three previously unrelated sciences, namely the deflection theory of suspension bridges, the mathematical theory of vibration analysis, and the science of aerodynamics, a new science of suspension-bridge aerodynamics had now been developed, permitting predictive control, solution, and cure of the problem. Two directions of solution have been made available, one by scientific methods of increasing the stiffness of the structure to resist the action, and the other by scientific de-

sign of aerodynamically stable sections, thereby eliminating the cause of the action. Assured safety of future suspension bridges has thus been achieved, without sacrificing economy and graceful design.

Achievement of New Foundation Depths

As the result of progress in the science and art of foundation design and construction, new records have been achieved in the magnitude and depth of bridge foundations sunk under the most difficult conditions. For the Huey P. Long Bridge over the Mississippi River at New Orleans, completed in 1935, a new record of 170-foot foundation depth was reached, using the artificial sand-island method. For the Transbay Bridge between San Francisco and Oakland, completed in 1936, a new foundation method was devised, using dome-capped caissons to regulate the sinking by controlling the release of air pressure. The piers were thus carried down to rock 240 feet below the water surface—the greatest foundation depth thus far attained.

Thus, the bridge engineer, in addition to his knowledge of superstructure design, has to be an expert on geology, hydraulics, methods of subsurface exploration, foundation design, and foundation construction.

Application of New Materials

Development of longer-span bridges has created an impelling need for improved bridge materials. This has taken two directions: one the development of higher-strength steels, and the other the development of lighter-weight metals for structural use. The economy of utilizing stronger or lighter metals obviously increases with the span-length.

The high-strength steels that have thus far been successfully used in bridge construction have included alloy steels (silicon steel, nickel steel, manganese steel, chrome-nickel steel), heat-treated carbon steel, and cold-drawn high-carbon bridge wire. Materials with three or four times the safe working strength of ordinary steel have been developed.

The principal lightweight material has been structural aluminum. Since 1932, aluminum has been applied in the construction of several notable bridges in the United States, England, and Canada, as well as to military bridges and pontons. New possibilities have thus been opened in the future attainment of longer spans.

Attainment of Beauty in Bridges

During the past 25 years, new attention has been concentrated on the attainment of beauty in bridges. Annual Artistic Bridge Awards, inaugurated in the United States in 1928, have focused attention on the importance of making bridges beautiful. New goals of artistic bridge design have been achieved through beauty and harmony of composition, through beauty of line, form, and proportions, through color and illumination. The modern bridge engineer has to be an artist and poet as well as mathematician, scientist, financier, and constructor. In every great bridge project there must be, first, the vision—then, the compelling endeavor to bring that vision to reality.

In our large cities and over our mighty rivers we see great bridges, beautiful bridges, bridges that inspire us and stir our imagination. The souls of men have been poured into their creation.

This epoch-making bridge, the longest and tallest single-span suspension bridge in the world, crosses San Francisco's famous Golden Gate channel.

Municipal Subsidies to Symphony Orchestras

IN SEVERAL CITIES, long-established philharmonic orchestras have been faced with financial difficulties and threats to their very existence. Many factors have contributed to the struggles of these important civic institutions — usually beyond their immediate control and not due to flaws in the quality of performances they render.

In commenting on the difficulties of the Kansas City Philharmonic Association, the *Kansas City Star* has editorialized on the general need for municipal support of the orchestra, declaring that the relief of rental payments for its regular concerts (equal approximately to $13,000 a year) is not enough of a subsidy, and pointing out that such music enterprises should not necessarily be expected to be self-supporting. The *Star* declares:

> The subsidizing arrangement of various cities differ in detail. Yet in the end they all come down to practical help on the assumption of the importance of the orchestra to the city.
>
> The great Philadelphia orchestra, for example, receives a municipal grant of $50,000 a year. Detroit's assistance is on the same scale. Baltimore contributes about $60,000 annually; Los Angeles (city and county), about $90,000. Among communities more nearly of our population class New Orleans makes a $16,000 grant; Buffalo, a $17,000 grant. Denver's assistance to its orchestra is reported at approximately $19,000. And the Indianapolis symphony is aided to the tune of $50,000 from taxpayers' funds. Our $13,000 or so in canceled rent seems on the low side by such comparisons.

Georgia Tech Offers Scholarship Aids In City Planning

A RESEARCH FELLOWSHIP in city planning carrying a stipend of $1,200 plus a tuition scholarship, and a Graduate Assistantship in city planning with a stipend of $1,000 plus tuition for the academic year 1952-53, have been announced by the Georgia Institute of Technology, as part of the comprehensive new city-planning program being offered there. Further information may be obtained from Howard K. Menhinick, Regents' Professor of City Planning, School of Architecture, Georgia Institute of Technology, Atlanta, Ga.

How Unwelcome Small Industries Can Turn Into

Community Assets

Zoning the wrong land for industry is as bad as over- or under-zoning

By SHIRLEY K. WERTHAMER
Westchester County Department of Planning
White Plains, N. Y.
and NEWELL B. LANDES
Yonkers Planning Board, Yonkers, N. Y.

DECENTRALIZATION of large industry is recognized today as a major economic phenomenon, and many smaller cities are actively planning to accommodate incoming plants (THE AMERICAN CITY, October 1951). But the decentralization of small, light industry, which has been going on since the thirties, has not generally received such attention—and the result has been haphazard location and blighting effect.

We all know these small industries —the garment-industry sub-contractors, the printers, the plastic-goods manufacturers — which have run away from the high costs of labor, loft space, and other facilities in the big cities, and have taken refuge in whatever quarters they could find in nearby communities. Generally, these communities have been either dormitory suburbs or municipalities where large industries had built their own structures to meet their own needs. Few could offer the light manufacturers suitable accommodations: 3,000 to 30,000 square feet of well-lit, properly heated loft space adequately served by utilities and transportation. So the newcomers settled in vacant stores, in second-floor warehouse space, or even in residential structures.

Both Community and Industry Dissatisfied

The effect of this new pattern was almost exclusively bad. Existing stable residential neighborhoods were encroached upon and eventually broken up. The physical plant of the community — its streets, sidewalks, sewers, water — has been exploited by uses it was not intended to serve.

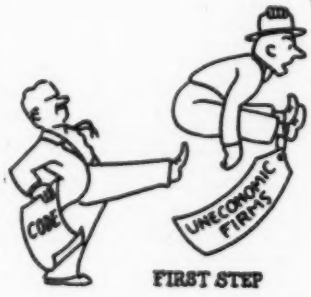
The industries, too, suffer from the makeshift nature of their arrangements. Their operations are hampered by the lack of satisfactory floor space, loading areas, street access, railroad sidings, and post-office service. And they are treated as second-class citizens, the first to be cited in any list of "causes of blight."

Yet, in spite of the present drawbacks on both sides of the picture, these firms contribute much to the community and consequently their proper development should be encouraged. They increase the tax base of the city. They diversify the economic and employment base. They bring jobs close to employees' homes, reducing commutation time and the traffic load on transportation facilities. They can often provide part-time work for housewives.

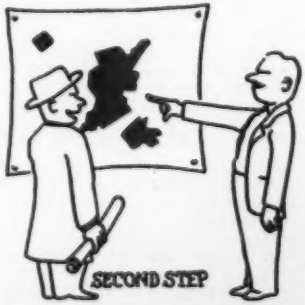
The problem for the city government, then, is to find ways to attract and hold these industries in new locations which will be advantageous to the industries and to the community.

It has often been assumed that these light industries have endured unfavorable locations because of the cheap rents they could achieve thereby. If this were the whole story, than a relocation program would indeed be difficult. To discover the real reason for the location of light industrial firms in marginal sites, and to find out whether they would be willing to pay economic rents for better space were it made available to them, a survey was conducted recently in Yonkers, N. Y., by the redevelopment section of the planning-board staff.

Yonkers, a city of 152,000 people, is well-located for market-oriented industries at the northern brink of New York City. It has a large skilled-labor force, including many women. Topographically it has few large areas suitable for large industrial plants, since it is one of the hilliest cities in the United States. There are 500 acres of land in Yonkers zoned at present for light manufacturing and industry. There are 420 acres throughout the city being used for these purposes—though not all within the 500 zoned acres. It is no great hardship for a firm to locate in



FIRST STEP



an area zoned for its use. However, there are no buildings erected for exclusively light manufacturing uses in the city.

Light industries have come to Yonkers, and, without too many zoning infractions, have located spottily all over the city — in vacant stores, in abandoned single-family frame houses, even in an abandoned school and a public-bath building.

Types of Plant and Rents Paid

In all, 22 of these firms were interviewed. They represented 10 types of light industrial uses ranging from garment factories (five) to one small plant making chlorine products in a two-car garage. Size of plant ranged from 3,000 to 35,000 square feet, with most (14) plants smaller than 4,500 square feet in floor area. At present these plants pay an average rent of 73 cents per square foot per year, within the range of 51 cents to 95 cents.

A Rating System

The degree to which these industries could become assets to the community, if given the choice, can be determined by the following rating system.

- *Highest potential*—those firms dissatisfied with present space and willing to pay economic rents for better space
- *Possible*—those firms needing additional space and facilities, but who own their present plants
- *Lowest potential* — those firms in their present locations only because of the low rents and/or wages paid. These are marginal firms existing only because of unfair and uneconomic advantages. They would be of little use to the community.

In Yonkers, eight firms (37%) fell definitely into the highest potential category; seven firms (31%) were in owner-occupied plants, including one whose major operations had been moved twice in the last two years from the original Yonkers site because of lack of expansion room. Four of these are now crowded for space. Of the remaining 32% of the plants in the lowest potential, four were satisfied with their existing locations, two were dissatisfied with the Yonkers labor market, which had grown tighter at non-union scale levels, and one firm was hoping to find even smaller quarters than its present 3,600 square feet at a rent even lower than its present 67 cents per square foot per year.

The results of this preliminary survey seem to indicate that it is worthwhile for medium-sized cities to plan for light industrial relocation. A program to remove light industries from locations where both they and the community suffer, and to locate them where both they and the community will profit, would involve the following three steps:

- 1. The enforcement of health and building-code standards, and the adoption of realistic tax-assessment and collection policies to force the uneconomic firms from the city. They add little to the income and much to the discomfort and blight of the community.
- 2. The zoning of well-located, central, flat areas for light industrial uses. Often, in the past, zones for industry have been the residual lands unfit for residential or commercial uses. Light industry did not want them either. There resulted the scattering of plants throughout these districts, while other plants, either by variance or spot zones, began their blighting effect in other use districts. Zoning the wrong land for industry is as bad as under- or over-zoning.
- 3. Within these zones, the creation of planned, well-located, well-served, and attractive light industrial districts, modeled after the publicly owned British trading estates or the privately developed Chicago industrial district. Such a district would be developed profitably by private enterprise, which could lease desirable loft space to such industries as the garment trades, knitting mills, and printing shops, at economic rents.

This would come as a bonanza to the present firms with "high potentials" in the community, as well as attracting new firms to the community. Yonkers has lost many such firms of late—some have moved from Yonkers sites, others have not located there after extensive efforts to find a Yonkers location—because of lack of good loft space. Other communities with labor surpluses, within major market areas, have probably been frustrated by the same phenomenon of business turning its back on them because of this lack.

Events in the last generation have shown that a diversified light-industrial economic base can be much more of a safeguard for the welfare of the community than single, large-scale, heavy industries. Yet most communities continue to force light manufacturers into unsightly, ill-served, and damaging locations. It is time that they be ferreted out and given their right place in the community.

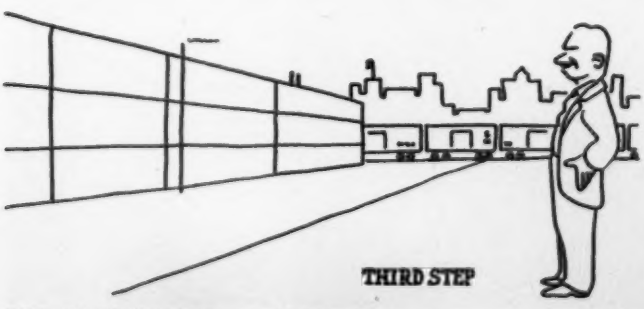
●

Spring-Cleaning Time For Municipal Buildings, Too

JUST AS THE HOUSEWIFE exerts an extra effort to delve into every nook and cranny at traditional spring-cleaning time, so the city administrator would do well at this time of year to organize a systematic attack for disposal of accumulated "junk," useless old records, or other surplus property stored away in garages, closets, attics, and warehouses. Such efforts can pay off in cash, too. At least, Kansas City finds this to be the case.

Last year the city's Director of Finance, Rollin F. Agard, was pinned with the additional job, referred to as that of "Commissioner of Cleaning Out the Attic and Hall Closet." As helpers to Mr. Agard, the City Manager named all his department heads and the purchasing agent. Everything they "dug up" or dug out of storage places that they did not need was turned over to the "Commissioner" for use in filling out requisitions or for selling if there was no other demand for it. All of this material was inventoried and placed in central storage.

The manager's order followed a pattern set by the Welfare Department, which had been salvaging unwanted materials for several years and putting it to use, particularly at the municipal farm. Discarded uniforms and equipment, alcohol, paint, gloves, boots, railroad ties and telephone poles, mattresses, stools, and a variety of other materials have been uncovered, used, and repaired or rebuilt.



Hiroshima Resurrected as Mecca of Peace

By KOICHI HASEGAWA *
Professor of Municipal Government
Waseda University
Tokyo, Japan

VISITING HIROSHIMA for the first time, a stranger would never realize that he had come to the city of atomic-bomb explosion, a city which was almost completely obliterated on August 6, 1945. On that fatal day more than 85,600 houses were destroyed, leaving somewhat intact only about 8,440 dwellings. More than 80,000 people died. The population was reduced from 419,182 to 136,518 and the life of the city itself was in complete jeopardy. Civic morale was pitifully paralyzed.

Today, however, new building and reconstruction projects are under way almost everywhere. Time and rehabilitation work have served to destroy other traces of the explosion. Although the dome-shaped roof of the Industrial Promotion Building is still nothing but a skeleton, all around it now there stand rows of new, though crude, houses and buildings. As further evidence that the city is fast getting back on its feet, the population is now more than 300,000.

How did the city become so revitalized? The industry and almost religious fervor in rebuilding, so courageously displayed by the Hiroshima people, are probably the most important factors. A long-range city-planning and reconstruction program has also helped to capture and focus their imagination on these renewal efforts.

The Law for the Construction of the Hiroshima Peace Commemorating City enacted by the National Diet and promulgated on August 6, 1949, designates the city in the preamble "As the symbol of the human ideal for eternal peace . . ." The spirit which lies at the core of Hiroshima's planning is that the city no longer belongs to the people of Hiroshima or Japan alone, but to the whole human society. With this theme, a great reconstruction program has been embarked upon, one of whose major objectives is the building of well-equipped facilities for international peace functions, as well as large-scale housing, working, recreation, and transportation facilities. More than 90 per cent of the funds required are furnished by the National Treasury. The people of the city fully realize the costs and difficulties involved, but have determined to continue their work of building a real "peace city."

Running across these pages is a recent view of the Western Sector of Hiroshima, taken from Hijiyama, showing the extent of rebuilding of an almost completely devastated area. Much reconstruction and planning work is still in progress. Note some of the new apartment structures.

Projects to Be Undertaken in Long-Range Program

A good start has been made in housing. Over the past four years an average of about 120 private residences per month have been built within city limits. The Hiroshima municipality has built some 4,000 dwelling units, and prefecturally built apartment houses total more than 400. Most of these are three- to four-story ferroconcrete structures, fireproof and shock-resistant.

A brief outline of other principal projects to be undertaken by the City of Hiroshima under the 15-year reconstruction program now under way may be summarized as follows:

● *Peace Hall Project.* Construction work on the proposed Peace Hall project has begun on a 12.23-hectare (30.22-acre) lot located at the approximate epicenter of the atomic-bomb explosion on a sector of a centrally located island of the city. The project, when completed, will consist of the following:

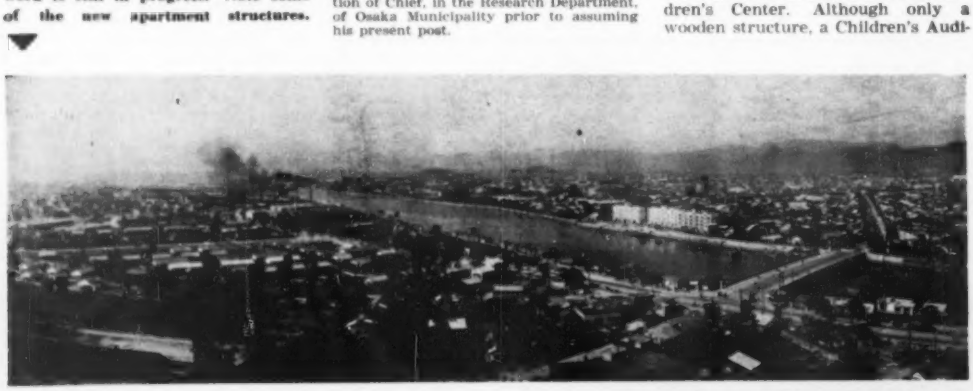
1. A Peace Hall with (a) a conference hall capable of holding 2,500 persons; (b) discussion rooms, office rooms, a library, and banquet hall, and (c) display rooms showing atomic-bomb relics and other objects
2. Peace Square capable of accommodating 20,000 persons
3. Peace Arch with bells
4. Memorial Chapel dedicated to the souls of war victims
5. Preserved remains of an atom-blasted structure (commonly referred to as the dome building)

● *Peace Park Project.* Located on a plot of land 210 acres in size, adjacent to and including a portion of the Peace Hall compound, the Peace Park will contain the following facilities:

1. A Children's Center consisting of (a) a main building with two conference rooms capable of holding 1,500 and 600 persons each, a club hall for international social functions, and a broadcasting room; (b) a library; (c) a science and art museum; (d) a club house, including a riverside boathouse; (e) a swimming pool, and (f) a playground, camping lots, and other recreational facilities

Some progress has already been made in the construction of the Children's Center. Although only a wooden structure, a Children's Audi-

* The author received his training in municipal government in the United States, having been a fellow at the Institute of Public Administration in New York City for two years. Before that, he took his A.B. at Miami University, Oxford, Ohio, and his M.A. at the University of Cincinnati and Columbia University. Upon returning to Japan, he held the position of Chief, in the Research Department, of Osaka Municipality prior to assuming his present post.



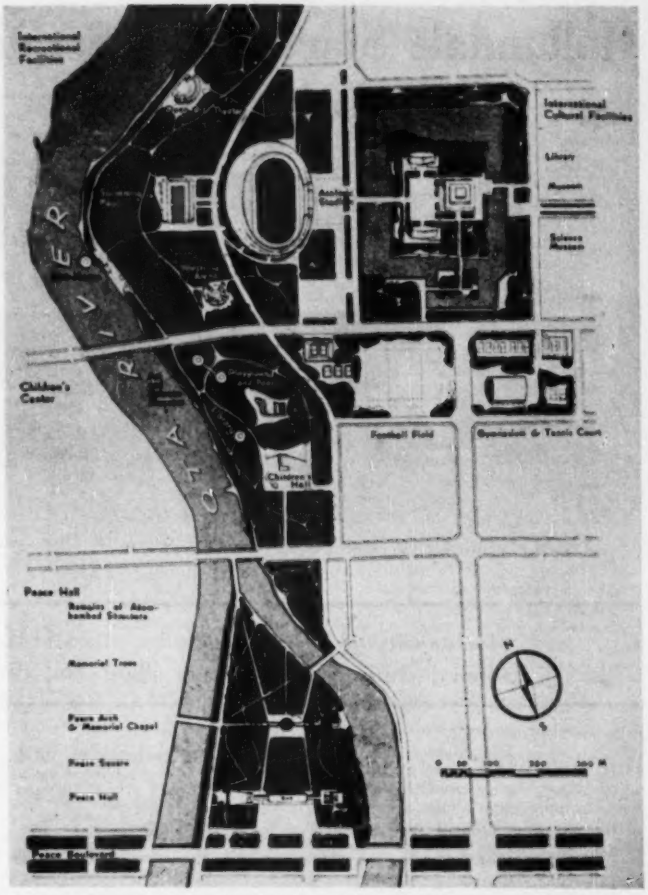
torium has already been erected and is being utilized by the children not only of Hiroshima City but of the surrounding communities as well. Construction of the Children's Library has begun.

2. International Cultural and Recreational Facilities. In order to foster these aims, an International Library and Museums of Science and Fine Arts are planned for inclusion in the Peace Park project. To promote international friendship and understanding through sports and recreation, plans have been made to install such facilities as an athletic stadium, a swimming pool, a wrestling arena, a football field, a gymnasium, etc. A botanical garden is also scheduled for inclusion in the Peace Park. Furthermore, baseball parks, auto-race and horse-race tracks, and a golf course are scheduled for construction in and around the city limits.

● *Peace Boulevard and Bridges.* A huge parkway 100 meters wide running east and west, called the Peace Boulevard (symbolizing the "Road to Peace"), is expected to become the most impressive greenbelt in the city, if not in the whole of Japan.

Hiroshima City is traversed by seven rivers running southward to the sea. Arterial roads cutting across these rivers require 52 spans of bridges, 32 of which still remain to be installed. To the people of Hiroshima, bridges have come to mean something more than mere links connecting two separate pieces of land. As symbols of the links uniting one culture with another, it has been proposed that they be designed and named to represent the cultures of the various nations of the world.

● *International Hotels and Dormitory.* For a city to become truly international in character, as Hiroshima hopes to be, it must be fully equipped with proper lodging facilities for visitors. Plans are being made to establish tourist hotels on such beautiful sites as Moto-Ujina, which juts out into Hiroshima Bay and commands a full view of the Seto Inland Sea as well as a sweep of the whole city and Asano Park, a typical Japanese garden of great beauty. Appropriate dormitory facilities are being planned for the benefit of foreign children, youths, and students, who are expected to be guests of Hiroshima in large numbers in the future.



This is a diagram of Hiroshima's Peace Park Project, the central theme of the city's planning program. Provision has also been made for acquisition of additional riverfront lands for the development of park areas further upstream on the Ota River. This project was designed by a Planning Research Group of the Architectural Department of Tokyo University.

Hallandale Starts from Scratch

Typical of much Florida architecture, this building houses the filters, control gallery, and chemical feeders.

Florida City of 5,000 has choice of water-treatment methods when it builds entirely new plant and distribution system

By **HAROLD D. BRILEY** *and* **HARRY E. WILD**
Briley-Wild Associates, Consulting Engineers
Daytona Beach, Fla.

IF A CITY OF 5,000 without either water supply or distribution system were to build today, what sort of a plant would it erect? In most cities today, the usual problem is one of remodeling, not of building anew. But to Hallandale, Fla., the problem was one of "starting from scratch." So, in view of the present methods of water supply and treatment available to the designer, Hallandale's new system takes on special significance.

Hallandale came into being about a half century ago when a group of Swedish farmers settled here because it gave them the opportunity to operate truck farms both winter and summer. But the same climate that encouraged these thrifty people to work all winter, encouraged others to settle there and rest until the winter snows passed away farther north. Today, the area has ceased to be agricultural and now is a thriving tourist center.

The upflow clarifier reaches out of the ground to form an inverted, truncated cone. Note many new homes that have sprung up around the Hallandale plant.

Groundwater Supply Endangered

The reason that this city did not build a water-supply system sooner was that groundwater had always been plentiful. All one had to do was to sink a well point and he would get plenty of water for household needs. True, it might be hard, and probably would be somewhat brackish with a relatively high chloride content, but it would be water. Nevertheless, as the population grew, more septic tanks were constructed so that in the last few years the water scarcely was safe bacteriologically. With the stratified limestone character of the subsoil, raw sewage from the cesspools could intermingle freely with groundwater and produce a mixture of doubtful purity. Those selling bottled water and renting home water-

softeners did a thriving business in Hallandale.

Progressive citizens, however, recognized the need for a better quality water of assured purity, and, therefore, took the necessary steps which resulted in a revenue-bond issue of $900,000 to build this improvement.

No Prior Pumpage Figures

When one starts from scratch to design a water works, he has no pumpage figures to tell him how much water the community needs. So he has to make his estimates of demand from other evidence. This, together with other details of design and construction, became the obligation of our firm when we were retained by the city for the project. Preliminary studies indicated that the city was growing rapidly; the normal year-round population of the city was just over 1,000 in 1930, was 1,800 in 1940, and went to 5,000 in 1950. The winter population is at present about 7,600. Since a water works has to be designed to anticipate at least 30 years of service, the population curve was projected to 1980, at which time it was estimated that the city would have 12,500 year-round residents with 18,500 maximum winter peaks.

Actually, Hallandale had two water works of sorts. One, a municipal system, consisted of a shallow well and a well pump to supply water to the city hall and provide tap water where residents could fill containers for their own use; the other, a privately owned system which served a small area of about 30 customers. The remainder of the city has been served by individual supplies.

How the Total Quantity Was Estimated

Since the city is fundamentally residential, an average daily per capita usage of 80 gallons was employed on a design basis with the maximum month estimated to be 125% of the average and the maximum day estimated to be 150% of the average. The only non-residential water users of consequence are a kennel club and a race track whose usage figures were calculated. Based on these studies, a figure of 2,000,000 gallons per day was estimated to be adequate until 1980. The proposed plant was constructed around this estimate.

Well-Field Location

Having this decided, the next point of study was where to get the water. This area has several good groundwater aquifers. One, however, known as the Tamiami formation, looked particularly good since it is fed by the 4,000-square-mile natural reservoir popularly known as the Everglades. To prevent salt-water contamination from being drawn into the circle of influence of wells tapping this aquifer, two wells were drilled far enough apart so that their cones of influence would not conflict and that the rate of water withdrawal from any one would not be great. The wells are the gravel-wall type, drilled by the Layne Atlantic Company. They are supplied with a 20-inch casing; the gravel-wall portion has been reamed out to 40 inches for a distance of between 90 and 125 feet from the ground. The water rises in the casing to within 20 feet of the surface. The wells are equipped with Layne & Bowler turbine-type pumps, each capable of delivering 750 gallons per minute against a 50-foot head.

The water that the pumps deliver, while it is satisfactory bacteriologically, has a total hardness in excess of 240 ppm, most of it being bicarbonate hardness. Also, it has a certain amount of organic color. Since water should be reasonably soft, clear, and free from objectionable minerals and gases, as well as free from bacteriological impurities, some sort of softening- and color-removal treatment was required.

Upflow Softening

After study of the various softening methods available, the lime-alum treatment was selected because of its effectiveness in removing color as well as hardness. The treatment was designed to soften the water to approximately 85-ppm hardness.

To provide this treatment, a modern type of treating unit, employing either the principle of a suspended sludge blanket or that of dynamic separation, was specified. The unit that was selected, on the basis of bids offered, was the Permutit Precipitator.

This was designed to operate using a suspended sludge blanket that encourages good chemical action between the minerals in the water and the lime-alum added. It is expected to deliver an effluent with no more than 5 ppm of floc still remaining to be removed by filters.

For the rapid-sand filters, the conventional design figure of 2 gallons per square foot of filter area per minute was used rather than the high-rate figure that is seen in some modern plants on the basis that, in this area where population growth is extremely rapid, the use of the lower rate would provide a factor of safety in the design.

A pulverized hard-coal filter medium, known as Anthrafilt, was used for these filters. This lighter-weight filter medium requires less backwashing to produce its cleaning action, and is reported as not coating so quickly with carbonate as do sand grains.

This carbonate-coating problem — one that causes much trouble in many softening plants — will not be a difficulty here, however, because of the way that the recarbonation step is supplied. In this case, the water is recarbonated before it goes to the filter, so that the excess alkalinity is corrected before it has a chance to be troublesome. The design uses an oil heater to supply the carbon dioxide. This is piped to a recarbonation pipe of the engineer's design and diffused into the water under approximately 12 feet of head through the pores of an 18-foot hose.

The filters, to assist in cleaning, use Palmer surface-wash equipment and are backwashed by a Fairbanks-Morse, low-head, propeller-type pump rather than from a wash-water tank. Chlorinators can supply either pre- or post-chlorination or both, as the treatment seems to dictate.

The filters will deliver the water to a 100,000-gallon clear well where three high-service pumps transfer it to the distribution system. Two of these pumps are rated at 500 gallons per minute against a 175-foot head; these are powered by 60-hp electric motors. One is rated at 1,000 gallons per minute against the same head and can be driven either by a gasoline or an electric motor rated at 75-hp. Both pumps and motors are Fairbanks-Morse.

Floating on the distribution system is a 200,000-gallon Chicago Bridge and Iron Company elevated tank. This tank is protected both by paint and by cathodic devices. In this case, the Electro-Rustproofing elements were used.

Distribution System Metered

The distribution system consists of 30 miles of mechanical, bolted, joint cast-iron pipe. Because the water will be noncorrosive, there is no need to line the pipe with cement mortar.

Fire hydrants have been placed in a circular pattern so that 500 feet of hose will give double coverage to the area. In this case, 130 Iowa hydrants were supplied.

The entire system is fully metered. This involved approximately 1,000 meters varying from 5/8-inch to 3-inch sizes. These are all Rockwell meters placed in individual meter boxes at the lot line.

Foster J. Ingalls is the Mayor of the City of Hallandale; D. M. Holmes has been selected as the Water Superintendent, and Briley-Wild Associates were retained by the city to design and supervise the construction of the water-works improvements. B. N. Wilson served as resident engineer for the construction.

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Coordinate Transportation

for metropolitan communities

By E. E. KEARNS *
Manager, Urban Transit Division
General Electric Company
Erie, Pa.

THE ESSENCE of the traffic-congestion problem is that there are not and never will be enough streets, freeways, tunnels, bridges, and parking spaces to permit the movement of all people and goods over paved streets and highways. Take New York City, for example. It would require 12 to 15 six-lane, grade-separated parkways to provide the same passenger-carrying capacity as a four-track subway. Not only this, but where, oh, where would you park the cars delivered by such wide expanses of multiple freeways?

Recently I was shown a brand-new building on the Miracle Mile of Wilshire Boulevard in Los Angeles. The far-seeing planners had heeded the admonition that it would take the floor area of another building of equal size to park only the cars of the workers in the building, if they all came in private autos. Of course, over and above those working in the building there are customers and clients who wish to come there too. Automobile parking space exceeding the total floor area of the building was provided beside and behind the building. The manager of the enterprise took me to the roof to see the result. The parking area was jammed and cars were cruising about the lanes to find parking space. His comment was, "We'd fill twice that parking area if we had it!"

Solve It With City Transportation

The solution of the traffic-congestion problem is to build up public-transit systems in our metropolitan areas, including railroad-commuter services, to a point where they will attract a substantially greater number of riders. In July of 1951, the New York Regional Plan Association made public its interesting and thorough studies of the New York-commuter problem. The conclusion reached was that development of rail-transportation facilities had lagged far behind that for automotive vehicles. Recommendations were made that ways be found to bring the high-speed, rapid-transit and commuter developments abreast of those already made for handling rubber-tired vehicles and that there be an adequate cooperative effort between the various states, public-transit systems, and railroads to bring this greatly needed development into being. Some excellent considerations and suggestions were voiced in William Reid's luncheon address at the Sixth Regional Plan Conference in New York City on October 9, 1951. This was followed by further pertinent addresses and papers by Mr. Reid, Mr. Shoemaker of the Lackawanna Railroad, Mr. Draper of the Long Island Railroad, and others, setting forth various aspects of this problem as it pertains to the New York area.

Two public-transit coaches can carry seated everybody in all of the cars in sight on this heavily traveled road.

Other cities have developed, or are considering plans for, the installation and major expansion of high-speed rail rapid transit. The Boston metropolitan area, through its Metropolitan Transit Authority, has outlined a substantial increase in rapid-transit services. It is working toward this end as circumstances and financing permit. Primarily, the plan involves using branch-line railroad rights-of-way for its extensions, and envisions financing backed up by general lien credit. Chicago is expanding its rapid-transit system and is endeavoring to demonstrate that this can be accomplished through revenue-bond financing. Cleveland is starting its rapid-transit route by utilizing the right-of-way established for that purpose when the Union Terminal project was developed years ago. Financing in this case is also on a revenue-bond basis. The City of Toronto is well along with its first rapid-transit route, the North-South Yonge Street project. The financing is on a revenue basis but the system, in the final analysis, does have the backing of a Toronto general-lien security. Active studies of rapid transit are under way at Los Angeles, San Francisco, St. Louis, Detroit, and other large metropolitan areas.

Financing

It is becoming evident that most serious consideration must be given to future methods of financing which will have to be employed to raise the large amounts of capital necessary to accomplish the results desired. One school of thought holds the well-justified opinion that these projects, particularly the rights-of-way, will have to be financed through general-lien credit. This thinking is based on the theory that these rights-of-way cannot be fully supported out of passenger revenue and, furthermore, that they should not be fully supported out of such revenues because all people in a large metropolitan area benefit greatly by a modern rapid-transit system, whether they use the services or not. It makes the movement of people to all points of the area much faster and more convenient. It also contributes in major fashion to relief from traffic-congestion. This school takes the position that rights-of-way for rapid transit should be considered in the same class as other community services, such as streets, water, sewers, lighting, etc., and should be the responsibility of the community at large. Since communities now provide a very considerable share of the streets, parkways, bridges, tunnels, etc., built to handle automotive traffic, it seems logical that, under the same considerations of responsibility, they should provide the right-of-way for high-speed rail rapid transit. They contend that the taxpayer's investment per peak passenger handled for the long-trip rider is tremendously less for high-speed rail facilities than for paved freeway lanes, however important both may be.

Operation

The operation of such lines can be undertaken either by an authority or by a private enterprise under contract. The City of Philadelphia has an arrangement whereby it provides a certain portion of the rapid-transit

* From a paper presented before the American Institute of Electrical Engineers at the Hotel Statler, New York City, on January 22, 1952.

financing and contracts with the Philadelphia Transportation Company for operation.

There has been a suggestion made that private enterprise contracts could carry major incentive provisions to enhance both maximum patronage and greatest efficiency of operation. For example, a certain amount per passenger handled could be given to the private carrier contractor. This would result in the contractor doing all within his power to increase the number of patrons. An additional amount could be given based on the percentage of fixed charges earned out of fares over and above operating costs with specified standards of operation and maintenance, and agreed rates of interest and depreciation.

Downtown Worcester Due for Transformation

By RAYMOND P. HAROLD, *President Worcester Federal Savings and Loan Association and Chairman, Worcester Housing Authority, Worcester, Mass.*

THE HEART OF WORCESTER, MASS., is due for transformation in the preliminary redevelopment plan for the New Salem Street Project Area (1-A) prepared by the Worcester Housing Authority, unanimously approved by the City Council for the Final Advance Planning Stage on February 7, and enthusiastically received by local groups.

Major objectives of the plan, to be carried out under the provisions of Title I of the Housing Act of 1949, call for elimination of a blighted area, improvement of vehicular circulation, provision of adequate off-street parking, and stabilization of land and building values. The aim is to bolster the downtown business district so that it will not decline and become ineffective in competition with outlying shopping centers. Further study is expected to show whether additional surrounding sites should be incorporated into the Project Area 1-A.

Proposed new use possibilities for the area include a new public library, City Hall annex, an office building and commercial structures, and a bus terminal, as well as off-street parking for 2,000 cars.

The site, as outlined at the present, contains 86 residential structures, 78 in "very bad" or "extremely bad" condition, housing in all 390 families and 357 roomers, including 72 active welfare cases. Approximately half of the families are eligible for and desire to move into public housing.

Fortunately, the Worcester Housing Authority already has 700 public-housing units in operation, with 794 nearing completion. The two large projects under construction are the state-aided Curtis Apartments (for veterans), with 196 of its 390 units presently occupied, and the 598-unit Federal Title III project, Great Brook Valley Garden Apartments. These housing units are being built on vacant city-owned land on the outskirts of the city as part of a much larger plan for Great Brook Valley, first proposed in February 1950 by the Authority as an entire community development to be planned and controlled by the city. The City Council subsequently appointed a Great Brook Valley Commission to study and make recommendations for the area's development, and the Great Brook Valley Plan is today far along the road to becoming a reality.

After the plan was accepted, the Authority decided the next step was to redevelop a blighted section of the old city center and thereby make room for improvements based on new and pressing demands. The preliminary redevelopment-area plan is designed as part of a future downtown inner-traffic system that will eventually tie in with a proposed $37,00,000 state freeway.

In presenting the project before the City Council, it was pointed out that the city's one-third share of the project-cost might be in the form of utilities or streets which could be financed on a 20-year-loan basis. Once the area is redeveloped, the increased property taxes, compared to tax receipts now, will more than offset the city's cost. Assessed valuation of the area in 1950 was $2,044,200, and current market value of the land and buildings in the area is now estimated at $2,630,000.

Provisions for relocating the one large industrial firm and several smaller commercial firms now operating in very old buildings in the area include the possibility of allowing the larger firms to remain under a lease arrangement to give them time to find a new place of business.

Slum clearance and redevelopment are here to stay. The people want to rebuild our cities and the job will be done. There are some who might prefer the slow building by building changes that have occurred in the past. We know today that the city cannot afford the excessive costs of this approach. Urban redevelopment permits the timely removal of blighted areas, and gives private enterprise maximum opportunity for sound investment. It will pay handsome dividends both to the community and to the participating businessman. Courageous action will cement the public support necessary to eliminate slums from American cities.

The downtown business district of Worcester, Mass., as it looks now. City Hall tower is in the immediate foreground, toward the right. The Common, also in the foreground, will be left untouched by redevelopment shown on front cover.

THE IMPORTANCE OF

Permanent Survey Markers

FOR RESIDENTIAL SITES

By SIDNEY E. DOYLE *

> *Thou shalt not remove thy neighbor's landmark.*
> —DEUTERONOMY IX-14

OWNERS AND WOULD-BE OWNERS of home sites discover trouble descending upon them from many sources when they overlook the importance of obtaining precise and permanently marked land surveys. Pointing out the problem, reviewing a few of its manifold evils, and locating responsibilities for continued neglect should help to bring about a solution.

Today's problem involves, as a rule, much smaller and more expensive parcels of land than those staked out by the pioneers. The complexities become increasingly acute under the triple impetus of (1) operational builders' activities, (2) defense housing, and (3) slum-clearance programs. The resulting increase in subdividing and replatting has produced much greater numbers of newly created residential sites. Such activity and speed of the times demanding that builders start almost immediate construction, allows little time to protect property-line indicators. This is what causes serious trouble.

Foremost among victims of this hurried activity are the purchasers of new subdivision lots, or of recently built houses in builders' additions. New owners are not usually aware of the vital need for permanently marked property lines until they make improvements adjacent to their boundaries. Then, even a few inches of encroachment by a drainage pipe, garage, driveway, fence, or even a decorative arbor, can bring immediate and righteous indignation from the man next door. Even today, many unwary property owners prefer to take a chance in "approximating" their boundaries.

Examples of Boundary Neglect

Typical of the need for resurveys in new projects are many instances in areas north of Seattle (King County), in Washington; and in central Montgomery County in Maryland, and the other environs of the Washington (D. C.) metropolitan area. Lot surveys had been included in the original work and cost of land development, but the markers had subsequently become lost. Costly additional surveys constantly occur in most urban areas where expansion is rapid and widespread.

"Costly additional surveys constantly occur in most of the urban areas where expansion is rapid. . . ."

Another type of boundary neglect is frequently provided by amateur contractor-builders in constructing their own homes. They usually build a smaller house on the outskirts of city limits, partly to locate on cheaper land and to escape the regulations of city codes. This type of builder often imagines he can safely estimate his land borders after an inexperienced or hurried subdivider has failed to provide adequate land markers. After having set his batter boards, this survey-guesser then happily estimates the "savings" he has made. Some, in total ignorance of the actual lot lines, construct far beyond their property and into the roadway. When one house has been erroneously located, others may blindly follow suit. Afterwards, when local authorities decide to widen the improved or the legal right-of-way, the result can be loss of a front yard or bringing of traffic close by the front door. The direct consequences can be a severe depreciation of valuable property.

A third type of trouble appears in long-established neighborhoods. Here, also, disputes arise from attempting relocation of lot lines from memory. It is exceedingly optimistic to assume that an improvement which extends upon a neighbor's property will be an overlooked trespass. Home owners resent trespassing as such and often follow up with immediate demands, frequently resulting in legal action. Better boundary-line preservation, through further legal requirement, is fast becoming accepted as one of our greatest neighborhood needs.

Some Current Regulations

Despite the urgency, little significant improvement of this problem appears in subdivision requirements of most states, cities, counties, or relevant federal agencies. Current regulations require that subdividing applications, to obtain official approval, must show permanent monuments only on the outside boundary, usually at the point-of-beginning. However, requirements to insure

* Mr. Doyle is a member of the planning staff of the Division of Slum Clearance and Urban Redevelopment, Housing and Home Finance Agency. This article does not necessarily reflect the opinions or policy of this Agency.

". . . the ethics of *caveat emptor* have long prevailed."

durably marked boundaries for residential lots or even blocks is not the law in most jurisdictions. There are, indeed, a very few exceptions, including Douglas County, Nebr., which requires an iron-pipe monument at each lot corner. A few areas are modern enough to require permanent monuments at the street corners in new subdivisions—including several counties and cities in Tennessee: Davidson County, Nashville, and Cookville. A 1926 Michigan law contains the same regulations for its cities and counties. It is this type of requirement which will end most of the boundary trouble for owners of single-residence property. How to extend the practice is the principal problem.

What practical minimum requirements can be stipulated as a reasonable approach to ultimate private-lot monumentation? Of course, serious opposition might be created by a law requiring permanent monuments for each housing site, especially in smaller communities. Requirements for the "corners" of each block, or comparable land area, would probably prove feasible and more acceptable as a beginning reform. To the individual lot owner this would prove a godsend. By running a steel tape to the nearest block corner he could then measure his front lot lines within close tolerance. In *Boundary Problems and Development Projects*,* it is stated: ". . . it is very advisable to require that concrete monuments be placed at the corner of each block. The small extra expense will eliminate an untold amount of trouble for all parties concerned." The block corner monument seems a reasonable minimum—especially since cost and competition are large factors.

State and Local Responsibilities

In the open real-estate market, the ethics of *caveat emptor* have long prevailed. In the past, it was presumed that the man in the market knew what he wanted to buy and its real condition. In today's competitive world these ethics still prevail and housing prime-agents and middlemen are impelled to render minimum service for maximum returns. There is a present disinclination to guarantee adequate boundary markers or render any survey service unless it is specifically required or especially paid for. Meanwhile, the public is becoming increasingly aware of the necessity for properly documented surveys as protection to purchasers of residential property. For this protection the ultimate burden, as in the days of the Gold Rush and other periods of notorious property-ownership abuses, seems to rest

The consequences of marking land inadequately can be extremely severe depreciation of valuable property.

with the local and state legislatures.

It has long been the policy for this country's governments to aid its citizenry whenever an over-all authority became necessary in curbing widespread abuses menacing property rights. If state and local governments, in the name of the common welfare, would require a more controlled system of permanent survey markers, the greatest part of the need would be fulfilled.

Some difficulties in preserving survey monuments may be eliminated by placing them in the dedicated public-street property adjacent to the front of the housing site. The responsibility for maintenance and control of these markers would then properly belong to the local county or city engineer. A measure of effective control over a satisfactory boundary-marking system will then have been achieved.

The responsibility for putting into law a subdivision requirement for the provision of permanent survey lot markers should not be solely that of legislative authorities, but of every individual and group providing the various elements of housing: builders, realtors, architects, surveyors, civil engineers, local building officials, building and loan companies, etc. Of the urgency of solving this problem all are painfully aware. But as Mr. Frederick Law Olmstead, one of the nation's foremost city planners, has said, ". . . The blame falls upon the whole system of penny-wise, pound-foolish, hand-to-mouth procedure in regard to city surveys that has been characteristic of a large proportion of American cities in the past."

It's Up to the Owner

In the last analysis, however, it is the local home and lot owner who bears the full impact of "lost" lot lines and who will have to help his locality to adopt adequate property-monumentation regulations. The individual owner must insist on a certified survey and be certain that his land borders are permanently marked—or be prepared to take the bothersome and costly consequences.

EDITORIAL NOTE:

One excellent reference on the subject covered in this article applying to the State of Washington, is "Surveys, Subdivision and Platting, and Boundaries," by the Bureau of Governmental Research and Services, University of Washington, Seattle, Wash. This report was published in June 1949. A supplement to it, on Washington State Laws and Judicial Decisions, was published in September 1951.

A Question for Mayors and City Managers

ARE YOU encouraging the cooperation available from your public-school system in your work for community improvement?

The March issue of *The School Executive* (470 Fourth Avenue, New York City 16) testifies to the desire of school administrators to aid city officials and citizens' organizations in raising the standards of local community service. A special 20-page section reports in some detail on the results of the magazine's National Competition for Community Improvement, the award winners of which were reported on page 155 of THE AMERICAN CITY last month.

Two Approaches

Two distinct approaches to the problem of community improvement emerge from an analysis of the 41 entries in this competition. Most prevalent was that of raising community standards by the development of a superior school system that would eventually provide a more enlightened and effective citizenry. The second, more direct, approach assumed the responsibility of analyzing community needs and devising ways and means by which the school could be used for raising the material and cultural standards of living in the community. The primary emphasis of this group was on the use of the school to improve the community, rather than the reverse.

"The test of a good school," says Walter D. Cocking, Chairman of the Board of Editors of *The School Executive*, "is the extent to which the community of which it is a part becomes a better place to live because of the school and its program."

As I see it (Dr. Cocking continued), school programs must be geared more and more for a direct approach. Those communities which accept, as one purpose of the school, the improvement of the community in which the school is located, must find programs and procedures which will seek to do just that thing. Students of community organization explain that all communities have three kinds of resources: human resources, man-made resources or social organizations, and natural and physical resources. Communities get better to the extent that their resources are improved. A school, then, should undertake to improve the resources its community has. The only limiting factor is the school's ability and preparedness to do the job.

* *Boundary Problems and Development Projects*, by D. G. W. Ricketts. Page XXV, Pelican Publishing Co., New Orleans, La., 1929.

Winston-Salem's Raw-Water Standpipe

City goes to the Yadkin River for more water, builds a 725,000-gallon standpipe to equalize the flow from the pumping station to the filter plant, enlarges one filter plant, and takes a second out of service

By STANFORD E. HARRIS
Superintendent
Water and Sewerage Division
Winston-Salem, N. C.

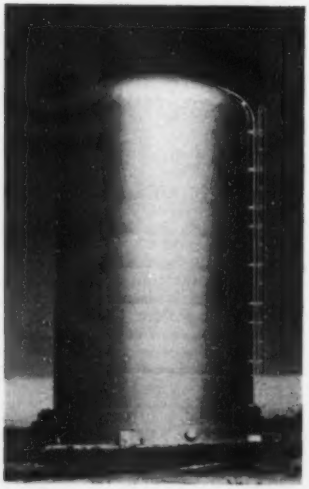
There was plenty of water in the Yadkin River, but it was 12 miles away from Winston-Salem, so this new pumping plant started it on its journey . . . ▼

WHEN WINSTON-SALEM, N. C., combined two rival communities into one city, it gained distinction for itself. This union has made possible a fast-growing industrial center that shows promise of being one of the greatest in the South.

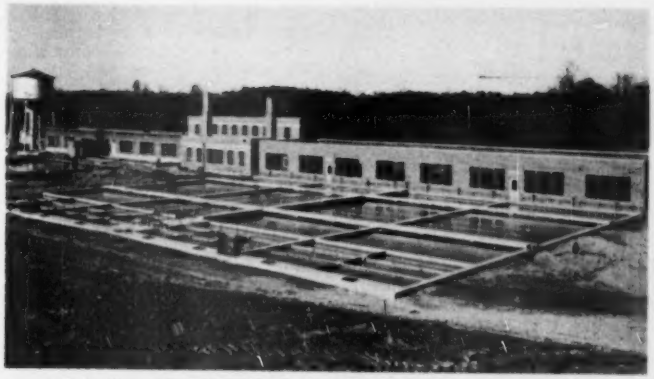
And when, today, it sets about to combine its two water-supply systems, it adds distinction for itself for resourcefulness, since it now builds one system with an ability to supply good water that matches the vigor and progress of the city itself.

For the past 44 years, the city obtained its water from three creeks and treated it in two plants. The Winston plant draws from a creek that feeds a reservoir holding 125,000,000 gallons; the Salem plant draws from a creek feeding a reservoir 10 times as large as Winston's.

. . . through a 36-inch Lock Joint prestressed concrete cylinder pipeline. The pipeline travels an uphill grade . . . ▶



. . . when it reaches this 725,000-gallon surge tank. From here the line is laid all the rest of the way on a downhill grade. . . . *(see top of next page)*



. . . and finally reaches the enlarged filter plant. The old plant forms the small wing at the left. The old impounding reservoir, however, is still used. . . . ▼

But even so, the creeks feeding the reservoirs simply weren't able to deliver enough to meet the demands of Winston-Salem's new industries. And when a creek runs short of water, as engineers know, no amount of argument will persuade it to deliver more.

So we went elsewhere. Some 12 miles away lay the Yadkin River, drawing from a watershed covering nearly 2,000 square miles, each square mile of which could furnish 1.25 cubic feet of water per second. There was plenty of water available; all that actually was required was to bring it to Winston-Salem.

This meant a pumping station, a transmission main, and a standpipe that forms what probably is the nation's largest raw-water equalizing reservoir.

The pumping station uses two Worthington vertical, 4-bowl turbine pumps, each designed to deliver water against a head of 320 feet. They are protected against back-flow by two emergency-closing, hydraulically operated, 18-inch roto-valves made by S. Morgan Smith. A Link-Belt traveling screen removes trash and debris from the water at the intake. The pumps are powered by 600-hp, 3-phase motors operating at 2,300 volts and 1,200 rpm.

The transmission main is 36 inches in diameter, built of Lock Joint prestressed concrete cylinder pipe. The distance from the pump to the standpipe is 15,800 feet, all uphill. From the standpipe to the filter plant is another 57,685 feet, all downgrade.

The standpipe, a welded-steel structure erected by the Chicago Bridge and Iron Company, is 41½ feet in diameter and 77 feet high with a capacity of 725,000 gallons. Its design allows an added 30 feet of height to be added if later operations prove this advisable. The flow from the standpipe is controlled by a butterfly valve at the plant that keeps the water level in the pipe constant. The flow is controlled so that water beyond the requirements of the filter plant can be diverted to the Salem reservoir for storage.

The Winston filter plant, after 44 years of service, is now being retired, and the Salem plant is getting an additional 8,000,000 gallons of filter capacity to help it carry the total load. Its total rated capacity with this addition is 20,000,000 gallons daily.

Previously, the Salem reservoir was connected to the filter plant by a 36-inch wood-stave transmission line. Now it is served by a 48-inch steel line fabricated by the Bethlehem Steel Company.

Enlarged Plant to Include Fluoridation

The enlarged Salem plant will have four new mixing-coagulation-settling basins and a new filtered-water reservoir with a capacity of 2,000,000 gallons. It also will have an entirely new set of mechanical chemical feeders that will apply alum or ferric sulphate, lime, carbon, and sodium silico-fluoride for fluoridation of the water as a dental-health measure. The eight new filters, each rated at 1,000,000 gallons daily, are equipped with Palmer surface washes and Wheeler underdrains. The plant can provide pre- or post-chlorination, and supplies Calgon as a final stabilizing agent.

The control of the water from the standpipe to the filter plant consists, as mentioned previously, of an 18-inch hydraulically actuated butterfly valve installed in the end of the 48-inch raw-water line. An increase in the water elevation closes the butterfly valve, reducing the flow.

Water goes to the city distribution system through five pumping mains ranging from 10 to 24 inches in diameter. The distribution system consists of 261 miles of mains, 5,120 gate valves, and 2,210 fire hydrants. The high-pressure pumping station has three new Morris, double-suction, horizontal, split-case, two-stage pumps. Each has a capacity of 6,000,000 gallons daily. The high-service pumping station has an electrically driven pumping capacity of 34,000,000 gallons per day, and a gasoline-driven standby pumping capacity of 13,500,000 gallons per day.

. . . and has the benefit of a new 48-inch steel line that will bring water to the filter plant.

QUEENSVIEW—

How this pioneering cooperative housing project in Long Island City is functioning — its history and importance to cities working on slum-clearance programs

By LOUIS H. PINK *
President
Queensview Cooperative, Inc.
New York, N. Y.

QUEENSVIEW, a cooperative housing development for 728 families of moderate incomes in Long Island City, across the river from Manhattan's East 79th Street, is the outcome of a long-cherished wish to do something for those who cannot afford the attractive surroundings available to the well-to-do and yet are ineligible, because of their earnings, for the subsidized public-housing-authority projects.

Unique Features

The Queensview project consists of 14 buildings of 14 stories, rectilinear in shape and with only 4 apartments to the floor, each apartment on a corner. Thus sunlight and cross-ventilation are available to all. There are two self-service elevators in each building and they stop at alternate floors. The buildings are comparatively small and so located as to admit the maximum in sun and light. The perimeter scheme with staggered structures provides long distance and wide vistas between buildings and affords easy access to streets and lobbies. A wide mall and garden have been created; there are two large playgrounds and a small play space for the nursery school, as well as parking space for 160 cars.

The apartments are laid out with unusually large rooms grouped around a central foyer, thus permitting access to each room without crossing another. Closet space is more than ample, with an average of six closets to an apartment, including a large walk-in storage space of approximately 25 square feet. Large dining foyers in most of the apartments and separate dining spaces in two buildings provide pleasant facilities. Low windows in the living rooms permit an unobstructed view of the project itself and the surrounding area, including a spectacular view of Manhattan Island for those apartments with western exposure.

There are no apartments on the first floors, which are devoted to laundry rooms, building services, community rooms, and space for social activities and for a few doctors' offices. Because of water conditions at the site there are no cellars. Buildings occupy only 13% of the land. When the trees and shrubs grow, the project will be even more attractive than it now is. It is hoped that some appropriate sculpture can be added, so that Queensview will gain further in distinction and uniqueness.

For all these various facilities and for the spacious and well-planned apartments, the monthly carrying charges average $17.25 per room, or $75 per apartment, including gas and electricity.

Experiment in Democracy

Considerable interest has been shown in Queensview because it is the first private non-discriminatory project. We made it clear to everyone that we would take Negro families on the same basis as white; there are about a dozen Negro tenant-owners. Many persons said that non-discriminatory houses were impracticable except in public-housing projects. As a matter of fact, we encountered little difficulty in sales and none whatever in subsequent management.

We have proved that tenant-owners can be garnered from the high-

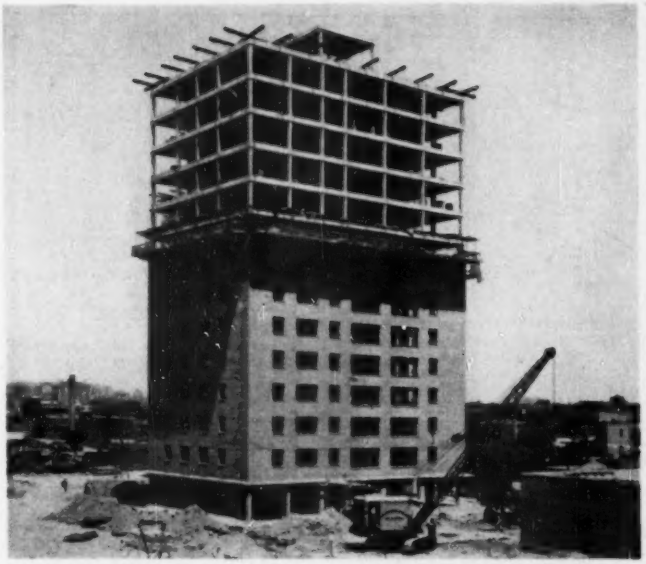
* The author is one of the early pioneers in the housing movement of this country. Among his other varied activities, he has been Superintendent of Insurance of New York State and he is at present Chairman of the Board of Associated Hospital Service—New York's Blue Cross plan.

A view looking north from Queensview building No. 2, showing buildings complete, but grounds not yet fully landscaped. The play area is in the foregound.

ways and byways—and that out of such an assembling come excellent cooperators. We have already elected three tenant-owners to our board of directors and we plan to add to this number, so that within three years they will have majority control.

Much intelligent and aggressive leadership has resulted. The cooperative has developed an almost unbelievable number of social and civic activities. The Community Council of Tenant-Owners determines all matters except those of policy and larger expenditures—which go to the directors or the executive committee of the board for final decision. To mention some of the activities, there are: a community council, a nursery school, a camera club, a ceramics club, a woodworking group, an art club, a bridge club, a bowling league, a softball league, a young adults club, a teen-age canteen, after-school activities (dancing, painting, music, dramatics, sports, play), scouting activities, civilian defense, children's Saturday movies, and a blood bank.

During the recent March of Dimes campaign, Queensview led all contributing apartment houses in the city in the amount donated; even the Queensview children held parties to raise funds.



One of the Queensview buildings under construction. There are four apartment units to each of the 14 floors. The buildings are constructed without basements, and first floors are devoted to laundry, community, and service activities.

History of the Project

For some years several of the large life insurance companies — notably the Metropolitan, the Equitable, the Prudential, and the New York Life— have built extensive projects for the often-forgotten middle-income groups. The Mutual of New York, of which I happen to be a trustee, was, however, more conservative. Lacking experience in housing, it preferred to invest in the usual run of securities and real-estate mortgages. In 1947, Lewis W. Douglas, then president of the Mutual (now chairman of the board) wanted to experiment with moderate-rental housing. Before leaving for Europe, as Ambassador to Great Britain, he appointed George D. Brown, Jr., an architect and planner with wide experience in housing, to work out a suggested program for the company.

When I was Chairman of the State Housing Board, Mr. Brown acted as Secretary. He had for many years been associated with federal and local housing and planning movements. We both wanted the Mutual to take advantage of the Redevelopment Companies Law and erect at least one project in the New York City area as a beginning toward a housing program. Mr. Brown discovered the Queensview site, which is readily accessible by subway and within 20 minutes of Times Square. The area was slum land with few residential buildings, but close to schools and churches, assessed at less than $1 per square foot. The neighborhood had been classified by the city as a backward area suitable for redevelopment, and on which tax exemption could be granted.

Queensview could never have been achieved without the aid and friendly cooperation of the City of New York. The city approved the condemnation of the land and agreed to grant partial tax exemption for 25 years in return for the redevelopment of a slum area which was heavily in tax arrears. The income of prospective tenants was limited to $6,950 per year, and even now among the 728 families we find that 481 have an income of less than $5,000. Commissioner Robert Moses, Comptroller Lazarus Joseph, and other officials continued throughout to aid and encourage us in every way.

Creating the Machinery

The cooperation of the Mutual of New York was also necessary on every step of the road. The Mutual came to the conclusion that it did not wish to undertake a housing venture and decided to discontinue the division it had set up under Mr. Brown, but before doing so asked him to complete his plans for the Long Island City site to a point where appraisal might be made as to the desirability and cost for a cooperative project.

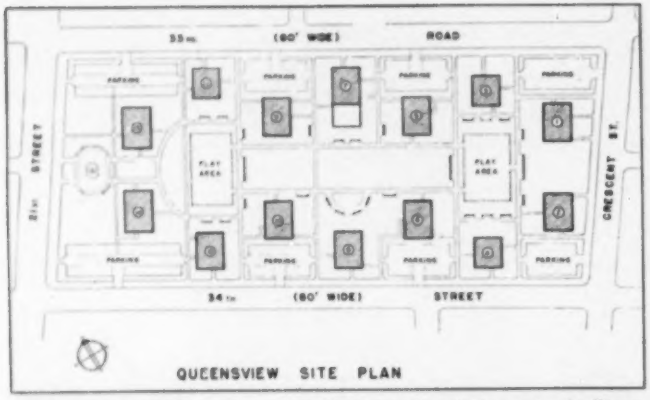
The Mutual became convinced that the Astoria project was sound, and that by erecting a cooperative instead of a rental development the main objections could be resolved. The company wanted to avoid the headache of tenant-management and the risk of putting up the entire cost of land and buildings. A cooperative would provide management and equity money (in this case 20%).

Gerard Swope and Maxwell Tretter were also anxious to start a cooperative housing development. In the spring of 1948, we joined forces and organized Queensview. Largely through Mr. Swope's efforts, we enlisted a number of prominent and public-spirited citizens as directors, many with experience in housing and four of whom had been members of the municipal housing authority. The character of the directors and the competence of the consultants gave the project standing with the public, the prospective tenants, the Mutual, and the city.

Queensview owned no property and had no capital. But we did have a promise of condemnation and tax exemption from the city, and the Mutual agreed to lend 80% of the $8,600,000 required. Both of these promises—from the city and the Mutual—were contingent upon our finding tenant-owners who could put down 20% of the cost, cash on the barrel.

Gerard Swope refused the presidency but consented to act as chairman of the board. I was elected president. Howard C. Sheperd, president of the National City Bank, agreed to become treasurer, and Maxwell Tretter was selected as executive secretary and counsel.

Next came the marshaling of consultants: James Felt for management and tenant-selection; George. Brown and Bernard Guenther from the Mu-



Note the details of this simple yet ingenious site plan of Queensview by Brown and Guenther, architects and housing consultants, with provisions for parking, play space, open area, a view, and freedom from interior traffic.

tual, architects; Alfred Rheinstein, former Chairman of the New York City Housing Authority, builder, and Abraham E. Kazan, who has made an outstanding record at the Amalgamated Housing projects, for cooperative practice.

No member of the board has received any compensation for his services over the years. The following were the original directors: Mrs. Yorke Allen, Howard S. Cullman, Bernard F. Gimbel, Albert D. Lasker, Rt. Rev. Msgr. E. Roberts Moore, Henry Morgenthau, Jr., Louis H. Pink, Beardsley Ruml, General David Sarnoff, G. Howland Shaw, Howard C. Sheperd, Mrs. Mary K. Simkhovitch, Gerard Swope, and Thomas J. Watson, Jr.

Getting the Money

We had achieved a capable organization, possessed plans, and had contingent promises of a mortgage from the Mutual and tax exemption from the city. But we had no money—and no tenant-owners.

At this point several of the directors joined in contributing $30,000 for site plans, advertising material, office help, and other expenditures, with the understanding that the money would be repaid without interest if the project went ahead. The consultants agreed to contribute their services, with the understanding that they would be paid only if the project became a reality.

James Felt, management expert and one of the consultants, carried a large part of the burden during the formative period. He provided office space and began recruiting tenant-owners. There was disagreement as to whether advertising was desirable; about 200 tenant-owners had already paid their deposits as a result of the free newspaper and radio publicity. One article in the *New York Post*, by Charles Abrams, secured 90 owners. But recruitment slowed down; we wisely decided to advertise, and sold 56 apartments in one day. Sachs Quality Department store aided buyers to visualize what they would get by permitting us to display a model apartment attractively decorated. Though it was not easy to get people who knew us only through the newspapers and through reputation to invest an average of $2,500 each—merely on blueprint and promises, and after looking over a most discouraging slum site—we actually did get the necessary equity. When we had sold enough apartments to complete 12 of the 14 buildings, we went ahead with the work and later added the two remaining buildings when necessary sales had been made.

At the request of the Mutual and the city, and for our own protection, we arranged to construct the project on a cost-plus-fixed-fee basis with a guaranteed maximum price. Without a guaranteed cost, neither the city nor the Mutual was willing to take a chance.

The Korean war added greatly to our headaches. Prices, already high, began to soar and materials became scarce and difficult to get. Construction took about a year longer than expected, but was finally completed below the cost limit. When Queensview was occupied and started operations, it had a capital of $100,000 saved from the estimated cost of the project, despite rising costs and the fact that we spent about $400,000 for extras and additional features not contemplated when construction contracts were awarded.

The Final Test

The real test will come as our tenant-owners assume more and more responsibility for the direction of the business affairs and social activities of Queensview. Only time will tell, but we hope that the efforts of those who made Queensview possible will be rewarded by the social and business success of the project, which now seems assured. We hope that it not only will prove a boon to those who live there but that it will set a standard and give encouragement to the organization of other genuine cooperative-housing developments not only in New York City but throughout the country. For unfortunately, most so-called "cooperatives" built with the encouragement of recent federal laws are cooperatives in name only. Queensview's example may help develop these merely "business inspired" projects into real cooperatives with community activities and genuine tenant control.

The ginkgo-tree fruit is hosed from branches with water at high pressure.

East Orange "Defruits" The Malodorous Ginkgo Tree

By HARRY E. TURNER, *Secretary-Forester*
East Orange (N. J.) Shade Tree Commission

FOR YEARS the East Orange Shade Tree Commission has been faced with an annual fall problem of giving the residents and property owners on six of our city streets some relief from the pungent odor of the ripened fruit from the female ginkgo trees, which were planted some 40 years ago.

The smell of the ripened fruit can be best described in the following manner: If you were to take a block of limburger cheese as a base, add the foulest odors from a garbage dump, and then top it off with the strongest smells of a slaughter house, you might get a vague idea of a comparable aroma.

The ginkgo tree was once represented by a number of species, but is now restricted to one form, *Ginkgo biloba*, or better known as the "maidenhair" tree of China and Japan, where it was cultivated in temple gardens. The Chinese name signifies "Silver Apricot" or "White Nut." The large silver-colored pits were considered a delicacy when roasted. The fruit was eaten on holy days. It owes its survival to this custom, since trees growing in the wild state are rarely found. A person would have no difficulty in identifying the ginkgo by its fan-shaped leaf, which turns a beautiful golden color in the fall of the year. The fruit resembles a plum in shape and size; it is a light green before ripe, and a flesh color when ripe.

We have tried to defruit these trees by sending climbers into the trees with 12-foot wooden poles with nails driven at random for a distance of four feet from the end. These nails are bent at right angles, forming a series of hooks. This tool will rip the fruit from the limbs and tear off many small branches as well as the ripe and unripened fruit, and takes from four to six hours to do a thorough job on a single tree.

After a climber has spent one day doing this task, it takes him two or three days to get the stench out of the pores of his skin. The following fall he makes sure to be on sick leave when this program starts.

This year we hit on an idea of using one-and-a-half-inch fire hose and nozzle connected directly to the fire hydrant. The stream of water at 90 pounds pressure did a 95% job on smaller trees and about 85% on larger ones. In order to reach the tops of the taller trees, we worked the hose off of our ladder truck as shown in the photograph. The fruit was raked into the streets in many cases by interested residents and picked up by the Elgin mechanical street sweeper.

A program of this type can be very well carried out by a commission or city department interested in defruiting municipally owned trees planted between the sidewalk and curb and even behind the sidewalk, if the operator uses care in guiding the stream of water so as not to damage houses.

For years we have been trying to defruit these trees by using chemicals which would burn the blossom before it sets, and the only result we got was a severe burning of the foliage.

Benefits

Now that we have defruited the ginkgo trees in this manner for the property owners on these streets, residents can now enjoy the sweet true smell of a bunch of roses on the table without the insinuation of odors from the flesh-colored ginkgo fruit outside their windows.

The many letters we have received from grateful taxpayers and residents on these streets is a testimony of thanks and appreciation of our work.

In spite of the trouble the females of this species give us, we must admit the male ginkgos do make good street trees. They require very little care, withstand high winds and hurricanes, and are fast growing; and the golden fall foliage adds beauty to streets and parkways.

The ginkgo fruit, after it has been hosed from the trees, practically covers the streets and sidewalks; it will be picked up by mechanical street sweepers.

ONEIDA COUNTY, N. Y., MOVES

Toward Streamlined County Government

COUNTY GOVERNMENT, with its numerous elective and appointive officers, departments, boards, and committees, and with its many relationships with the state, towns, cities, and school districts, is recognized as one of the most complex units in local government today throughout the country. With the increasing movement of population from central-city to outlying areas, and with the growth in activities and functions inaugurated by county governments, clearly careful attention must be given to improving county administrative structures. Once such modern structures for efficient and economical management of county affairs are provided, many of the problems of county government will receive the attention they require.

●

Oneida County, N. Y., has recently concluded a unique study of its government that helps to throw some light on the current status of county government in many areas. The report's recommendations should also be of general interest, as well as the manner in which the study was conducted and prepared.

THE ONEIDA COUNTY Board of Supervisors took the initial action, making possible the comprehensive study and survey of the government of the county, when it passed Local Law No. 2 which authorized the appointment of a taxpayers' commission to examine the needs of the county government and "to report its investigations, findings, and recommendations with all convenient speed to the board of supervisors." To implement this local law, the Board adopted a resolution officially appointing the commission and providing for a department of research for the study.

The 25-member commission (Oneida County Survey Committee) represented every segment of the county. For purposes of the study, the Municipal Research Bureau of Utica contributed the services of its director and all its facilities, without cost to the county, as a public service. The final report was prepared by the Bureau for the commission, and completed in December 1951.

These are some of the major findings from the report:

Population. The 1950 census showed a population of 222,855—a ten-fold increase over the first federal census taken in 1800. During the decade from 1940 to 1950, the population of the county increased by 19,219. Approximately 56% of this increase occurred in the towns. This population has created problems both for the cities which must face a diminishing tax base and for the towns which must provide increased governmental services. The solution to these problems lies in a metropolitan form of government embracing large areas geographically and economically related. At the present time, the county is the most logical unit to assume the function of this type of government.

Functions. In recent years, the county, with increasing delegations of power from the state, has rapidly expanded its regular functions and added new services. During the last decade activities inaugurated and administered by Oneida County have been:

- Civil Service
- County-wide Welfare
- Soil Conservation
- Fire Training
- Airport
- Veterans' Service
- Civil Defense
- Child Guidance
- Animal-Disease Control

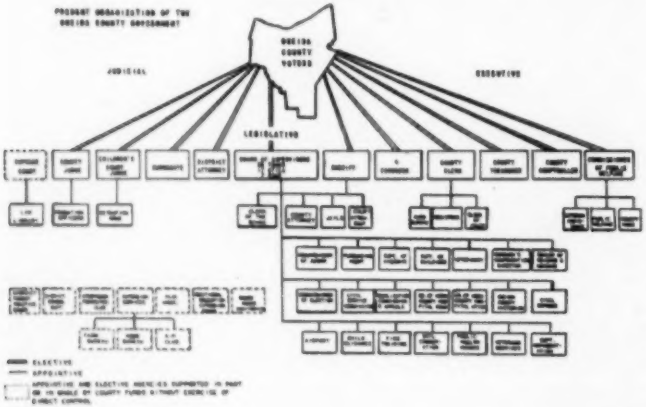
To ease the burden on cities experiencing population losses, certain functions administered by cities have been transferred to counties. In Oneida County, this has been done for the welfare function, and the administration of health on a county-wide basis has been suggested. It is generally predicted that the next 10 years will see the transfer of such functions as health, education, and police, in that order, to the county, to be administered on a metropolitan basis. Mere transference of any function to the county will not solve any problem. The sole test for such transfers should be more economical and efficient administration.

Units. In the administration of local government, the county is divided into numerous overlapping units, each having a definite territory, population, organization, legal standing, and taxing power. With only 12 units in 1800, the county today consists of 242 such sub-divisions, spending approximately $27,000,000 in the 1951 fiscal year:

- 1 county government
- 3 cities
- 27 towns (including outside district of Rome)
- 18 incorporated villages
- 2 city-school districts
- 88 outside districts
- 103 special districts

The county has established by law relationships with many of these units, and their continued multiplication will require a government organized to reduce and simplify both the units and the complex pattern of government that they create.

Personnel. Compared with the handful of town officers of which the early county-government personnel was composed, the county at present is annually employing an increasing number of people. The following tabulation, as classified by the county comptroller, gives an indication of



By T. J. ROBAK
Director
Municipal Research Bureau
Utica, N. Y.

the county's importance as an area employer:

	1950	1951
General Government	132	140
Judicial	50	55
Protection of Persons and Property	74	73
Health and Sanitation	292	295
Public Welfare	141	169
Highways and Public Works *	4	15
Corrections	27	30
Education	16	18
	736	795

* Includes airport but no seasonal workers.

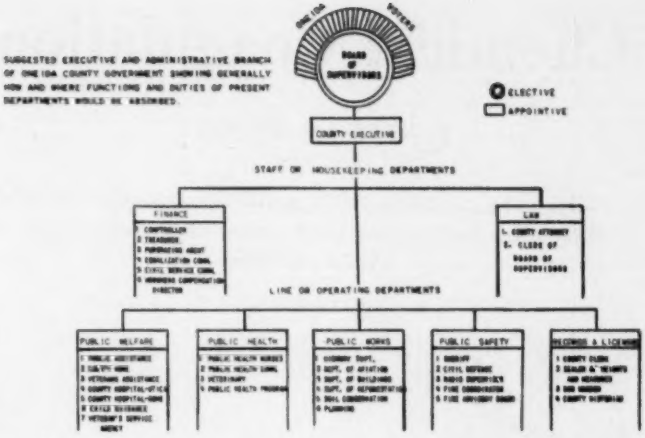
The appropriation for "salaries, wages, and fees" in the 1951 county budget amounts to **$1,820,041.63, or** 26% of the total budget, and exceeds the 1950 budget in that respect by $294,534.45.

Expenditures. Annual expenditures are a good index of the size and cost of county government. From 1947 to 1951, budget appropriations increased by $2,937,041.63, or approximately 75%. The appropriations as reduced by anticipated revenues become the tax levy. Annual tax levies for general county purposes also increased and in 1951 were apportioned among county units as follows:

Increased appropriations have increased taxes in both the cities and towns of the county, and both should have an equal interest in the operation and management of the county.

Since by any standard Oneida County is "big business," it should be organized along business lines. The first requirement in the county, as in any business, is a single executive responsible and accountable for the management of administrative activities. In private enterprise the executive is appointed by and responsible to a board of directors. In a close parallel, the executive in the county would be appointed by and responsible to the board of supervisors. The county executive should be appointed solely on the basis of his training, ability, and experience as an administrator. Politics and residence should have no part in his selection. To insure administrative continuity, his appointment should be for at least four years. He could be removed at any time for reasons and by procedures outlined in the law. The effectiveness of the whole county administrative structure, including the cost and quality of management, will depend entirely on the executive chosen for the job. Great care and study must be given to his selection.

Present functions and activities of an administrative nature, now dispersed among 76 separate departments, boards, commissions, and committees, would be consolidated into the following departments under the centralized management of the county executive:



SUGGESTED EXECUTIVE AND ADMINISTRATIVE BRANCH OF ONEIDA COUNTY GOVERNMENT SHOWING GENERALLY HOW AND WHERE FUNCTIONS AND DUTIES OF PRESENT DEPARTMENTS WOULD BE ASSIGNED.

Department of Finance. Headed by a director of finance, who would administer all the county activities relating to finance. The county executive could act as the finance director and thus head the department.

Department of Law. Headed by the county attorney, who would act as legal advisor to the board of supervisors, the chief executive, and the other departments. He would be responsible for prosecuting and defending all civil suits brought by or against the county. The clerk of the board of supervisors would continue to serve as a legislative secretary of the board and would be appointed by the board. His administrative duties, however, would be allocated to the proper department. Those of a legal nature would be placed in the law department, those of a financial nature in the finance department, and those relating to records in the department of records and licenses.

Department of Public Welfare. Headed by a commissioner of public welfare, who would be responsible for all county-welfare activities including the administration of the county hospitals, the veterans' service agency, and the child-guidance clinic.

Department of Public Works. Headed by a director of public works, who would be responsible for the construction and maintenance of all county highways and bridges, the care and maintenance of all county buildings, the administration of the county airport, soil conservation, planning for future county growth and development, and all other public works.

Department of Public Safety. Headed by a director of public safety, who would be responsible for all police activities now vested in the sheriff. The director would also be responsible for the administration of the office of civil defense and the Oneida County fire-training and mutual-aid program, since both are concerned with public safety.

Department of Records and Licenses. Headed by a county clerk, who would be responsible for all functions of the present office of county clerk, sealer of weights and measures, county historian, and the dog warden. The county clerk would also be responsible for serving and executing warrants, which is now a function of the sheriff.

Department of Public Health. Headed by a county-health commissioner responsible for all health activities and programs in the county, including the functions of the public-health-nurses committee and the county veterinary.

The consolidation of all administrative activities into seven departments under the unified control of a county executive, would provide Oneida County with a modern administrative structure, organized to meet the present and future needs of a county destined to assume an increasingly important role as a unit of local government.

Home Rule Possible For New York Counties

Counties in New York, unlike those in some other states, are fortunate in that under the county home rule amendment to the state constitution, passed in 1935, they have the power to administer their property, affairs, and government on the basis of optional forms of county government provided by the state legislature. But, to date, only three counties—Monroe, Nassau, and Westchester—have availed themselves of the opportunity for such self-government.*

Editor's Note: Monroe County adopted the county-manager option and this plan went into effect on January 1, 1936. Manager is appointed.

In the case of Westchester and Nassau Counties, a constitutional amendment was adopted in 1929 permitting a variation from the regular form of county government and special county-charter legislation was enacted for these counties in 1936 and 1937 respectively, allowing them to operate under an elected-executive plan.

These three counties, therefore, are the only counties in New York State administered by a single executive.

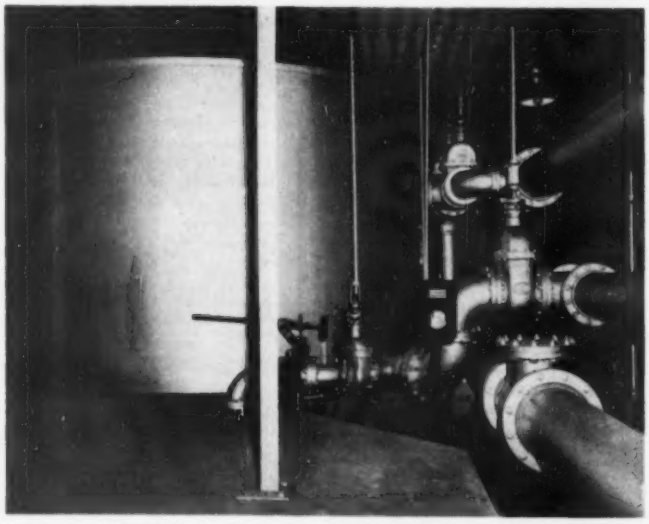
Chemical Coagulation

(*just in case*)

Norton, Va., enlarges its water-treatment plant to include alum feeding and coagulation, needed only about 5% of the time

By R. K. McCORD, *Town Manager, Norton, Va.*

The small tank at Norton's new plant is for use when the clear well is bypassed; next is the chemical tank. The largest is the sedimentation basin.



In the new plant there are two of these rapid-sand filters, and space is allowed for a third one eventually. Ludlow gate valves govern the filter operation.

NORMALLY, a mountain stream is a sparkling thing that inspires poets and stimulates those who love the out-of-doors. Normally, it brings pleasure to the city official because he can depend on it for a source of sparkling, taste-free water. But every now and then, even a sparkling mountain stream can turn muddy and turbid. And Norton's present water-improvement program was designed to meet those "now-and-then" occasions.

Improvements Set Into Old Plant

For almost 30 years, the city has been satisfied to run the water through a rapid sand filter with only a little lime added for pH control, and chlorination to insure the sanitary quality. The plant could deliver 520,000 gallons daily of water filtered without pre-chemical coagulation. The plant consisted of a filter, pump, and chemical equipment housed in a small wood-frame structure. It also had a covered clear-water basin and a 60,000-gallon wash-water tank. The mountain stream is impounded by a dam about 1,300 feet above and about one mile east of the filter plant. A second, small impounding reservoir is about 1,000 feet away, and is connected to the plant by a 10-inch pipeline. In the original plant, raw water passed directly to the filter, and received the lime after filtration as it passed into the clear well. A by-pass made it possible to cut out the clear-water basin and feed the main directly from the filter.

The location was good, so we decided to build the improvements into the old plant, utilizing the existing clear-water basin, impounding dam, and wash-water tank.

The first step in the work was that of building a two-story concrete-block filter building. This was erected over the existing clear-water basin with piers to the basin bottom for support. The building covers only the east end of the basin. Mixing and sedimentation tanks were placed conveniently along the north side of the basin next to the filter building.

In the new building, there is an American-Marsh centrifugal pump capable of handling 100 gallons per minute, which serves the wash-water tank, the only pump, incidentally, that we need. We also have a new Wallace and Tiernan chlorinator located close to the building entrance. The two filters consist of steel rapid-sand-type units, 8 feet high and 12½ feet in diameter. These contain 18 inches of gravel over the perforated laterals and then 30 inches of sand. The top of the trough is 6 feet from the bottom of the filter and a 7-foot water level is maintained during filtration. Each filter can handle 365,000 gallons per day, and we can install a third filter, if needed. The filters, the surge tank, the sedimentation tank, and other accessories

were installed by the Pittsburgh-Des Moines Steel Company.

The pipe gallery is at the back of the plant. In it are a Builders-Providence Model RCE rate of flow controller and a Chronoflo transmitter for each tank.

A stairway leads to the mezzanine floor where the operating valves for the filter tanks are located. At the right of the stairway is a chemical room where our old Wallace and Tiernan dry-lime feeder is installed, as are the two new Leopold dry-chemical feeders for alum and soda ash. Two pipelines extend from the Leopold machines directly through the filtration-building wall to the mixing tank for chemical injection. The room provides for chemical storage as well as for a laboratory and testing equipment. We chlorinate all water, whether it goes through the filter plant or not.

At present, the piping arrangements under normal operation bring the raw water into the mixing tank where chemicals are applied, if needed. From there it flows to the sedimentation tank, to the filter, and then to the 750,000-gallon clear-water basin after receiving chlorine and lime treatment. A 12-inch line takes the water from the clear well to the distribution system; an 8-inch Sparling meter measures it as it goes. Concurrent with the new plant construction, is the erection of a new 352,000-gallon steel storage standpipe on a hill adjacent to the main part of town. This tank is slightly below the level of the clear-water basin, and the water level is very effectively controlled by a Ross altitude valve.

The town has 75,250 feet of mains and 72 fire hydrants. We have 980 accounts, all metered. We use Rockwell and Lambert meters. Our water demand averages 400,000 gallons daily. Since our system is gravity fed, it needs no pumping. Our line-pressures average between 80 and 125 pounds per square inch.

As we mentioned before, with the old plant we had clear, sparkling mountain water 95% of the time, but while 95% may be a good grade in a school or college, it is not good enough for standard engineering practice. The new plant removes the offending 5% of objectionable water, so that today we have water our mountain streams would be proud of.

Three New Planning Advisory Service Reports

Forms for Zoning Administration

Assistance in developing special printed forms to aid cities in the administration of their zoning ordinances, is available in the Planning Advisory Service Information Report entitled, "Forms for Zoning Administration," published by the American Society of Planning Officials. The report develops a checklist of procedural steps for which zoning forms may be required, including applications for building, use and occupancy permits, rejection of application by building inspector, notification of appeal to the zoning board of adjustment for a variance, or petition for a zoning amendment, public notice of hearings and affidavit of publication, and reports of action taken by the board of appeals or the city council. Sample forms collected from the hundreds in use throughout the United States are offered as guides to the proper preparation of administrative forms. The report is, in part, based upon a sample study of some 50 cities and counties in the United States which are noted for their effective zoning administration. In addition to the many zoning forms presented, tables are also included giving information about fees charged by the sample cities and counties for building and occupancy permits, for zoning appeals, and for zoning amendments and changes.

The Authority Technique—and Special Districts

Special authorities for the improvement of port districts, transportation facilities, and school structures, and for the provision of off-street parking, produce markets, municipal airports, and sewage and water systems, are becoming increasingly common throughout the United States. These and many other types of authorities are discussed in the Planning Advisory Service Information Report entitled, "Authorities for the Financing and Administration of Public Improvements." The report critically evaluates some of the advantages and disadvantages of the authority technique, and emphasizes the need to relate authority development programs to the long-range plan for capital improvement in the area. The bulletin includes a bibliography to references both in the general field of authorities and to the operation of specific agencies.

"The Special District, a New Zoning Development," a 28-page Planning Advisory Service report, discusses somewhat unusual zoning districts that have been established in ordinances to meet particular needs. Examples of such special districts are civic-center zones (particularly useful for state capitols), public and semi-public-use zones, forest recreation or greenbelt zones, yacht-basin zones, educational-institution zones, conversion districts, historical districts, and the like. Extensive excerpts from zoning ordinances are included in the bulletin.

Planning Advisory Service Information Reports are available only to subscribers to the Service. For further information write to the American Society of Planning Officials, 1313 E. 60th St., Chicago 37, Ill.

Let's Face It

THE FOLLOWING LIST of dilemmas that municipal officials and city planners must face realistically, in the hope of finding satisfactory solutions, was used effectively by the Research and Planning Division of the Connecticut Development Commission (State Office Building, Hartford) as a basis for discussion at its 1952 Community Development Clinic meeting:

We have people who like to, or have to live in trailers . . .
yet arbitrarily towns are prohibiting such a mode of living!

•

We have people with modest incomes who would like to have a small home on an average size lot . . .
yet towns are prohibiting small- or even medium-sized dwellings and they are jacking up lot sizes!

•

We're looking for "nice" light industries to help carry the tax load . . .
but towns don't want a lot of "low" or even "medium" income workers in small homes on "average" lots!

•

We're increasing in population, state-wide and locally, in an atomic era . . .
yet many towns lack any controls while others are operating under horse-and-buggy ordinances.

•

With increases in population there comes a demand for more business of varied types, such as outdoor theatres, drive-ins, etc. . . .
yet planners and zoners can find no place for them!

•

Local planners and zoners want to hold the line on any adverse developments . . .
yet the board of appeals often undermines the program—sometimes operating illegally.

•

We've got mutual developmental problems which cross political boundaries . . .
yet we are unwilling to take advantage of regional-planning opportunities.

•

We're attempting to redevelop certain slum and blighted areas, earmarking the cleared land for residence and industry in certain instances . . .
yet the Federal Government through N.S.R.B. and W.P.B. has established controls relative to dispersion, critical materials, defense housing, etc., which stymies current redevelopment programs.

•

We're faced with industrial dispersion as a governmental order and decentralization as a "natural" trend . . .
yet some towns unrealistically try to hold the line of the status quo.

To Obtain Fire-Alarm and

TO INSURE the continuity of existing facilities in sound working order, the National Production Authority regularly allots quantities of controlled materials for "maintenance, repair, and operating supplies" authorizing use of the symbol "MRO." Under this classification, provision is made for minor capital improvements, as later herein explained.

Agencies, industries, or projects for which symbols have thus been established are permitted to place this symbol on orders which are issued to suppliers (within permissible limits of its particular regulations). Orders thus placed are said to be "rated."

The amounts of critical materials allowed the various *manufacturers* are intended to cover their production for the quarter. Since a manufacturer may be penalized should he make deliveries on unrated orders, he will usually require a rating for each order. To apply this rating, a purchaser endorses his order with his appropriate authorized symbol with the prefix "DO" and the regulation establishing his authority. For example, for a purchase for maintenance, repair, and operating supplies: "DO-MRO Certified under CMP Regulation No. 5."

Projects of allowable types requiring relatively small amounts of controlled materials may be self-authorized, i.e., without special application to or approval by NPA. For instance, for erection of fire-alarm or police-signaling equipment, you may proceed provided your total requirements for the project do not exceed 2 tons of carbon steel or 200 pounds of copper *per project per quarter*. (Note: No aluminum is allowed for installation.) This means that a project requiring 400 pounds of copper may be undertaken on a self-allotment basis, if not over 200 pounds is used in each of two quarters.

Inasmuch as a *supplier* is permitted to deliver controlled materials only when he has obtained from the owner an allotment certificate, it is necessary and proper for the owner to "self-allot" the controlled materials within the permissible limits. In making the allotment, the purchasers must indicate the *exact* poundage and the quarter in which delivery is authorized. For instance, in the case of a fire-alarm project requiring line wire with 115 pounds of copper, for delivery in the second quarter of 1952, the purchaser would

Procedure for Obtaining Materials

1. A municipality * wishes to purchase parts for repairing its fire-alarm or police-signaling system. It may do so (up to the dollar limits of its quota) by rating its order "DO-MRO Certified under CMP Regulation No. 5."

2. A municipality wishes to purchase line wire (copper) for repairing its fire-alarm or police-signaling system. It may be done (up to the dollar limits of its quota) by allotting the copper as follows: "MRO Certified under CMP Regulation No. 5."

3. A municipality wishes to purchase two new fire-alarm boxes for replacing unworkable boxes which are not repairable. It may purchase on order rated MRO (as explained above) under the "Minor Capital Additions" provision.

4. A municipality wishes to purchase two new boxes and necessary copper line wire for expanding its system. The amount of copper involved is 100 pounds (no other copper is required except that in manufactured products, i. e., the boxes, lightning arresters, etc.). The municipality may issue its orders, rating, and self-allotting as follows: for manufactured products— "DO-U-8 Certified under CMP Regulation No. 6"; for copper wire— "U-8 Certified under CMP Regulation No. 6, 100 pounds copper 2Q52." (Note: The allotment for second quarter 1952 must be confirmed by the supplier; otherwise it may be invalidated.)

For a purchase for a police-signaling system, the purchase order would be rated and allotted with the project symbol "K-9".

5. A municipality wishes to purchase 20 fire-alarm boxes for a recently developed area. Their use will require line work, including wire with copper poundage of 315. The municipality may issue a purchase order under the self-allotment provision of CMP Regulation No. 6, specifying deliveries of wire in two separate quarters to conform to the 200 quarterly limit. On the other hand, it may file with NPA for specific allotment for the 315 pounds and, after approval is granted, issue its orders accordingly.

6. A municipality wishes to purchase a complete new fire-alarm system. (It makes no difference, as far as regulations are concerned whether purchase will replace an old system or provide a new facility.) The municipality must compute the amount of copper and steel needed for "construction" (excluding that in the boxes, central-office equipment, fire-station equipment, etc.). If the poundages fall within self-allotment limits of CMP Regulation No. 6, then purchase may be made as under Illustration 5. If poundages are outside those limits, special application will be required.

7. Assume same situation as Illustration 6 except that a central office only is to be purchased. The municipality will similarly compute poundage for controlled materials for installation (copper wire, for example). It will determine if this falls within self-allotment provisions or requires special application.

* NOTE: Where reference is made to a "municipality" it will be understood as applying in a broader sense to an industrial plant also. A factory or industrial plant, however, has greater limits under CMP Regulation No. 6; for instance, for one project it may self-allot up to 2,000 pounds of copper per quarter. Municipal applications should be accompanied by a covering letter by the mayor, city manager, or city engineer, setting forth reasons. In rural urban areas, a supporting letter from the fire commissioner is desirable in the case of emergency equipment; in industrial areas, from the director of civil defense.

Police-Signaling Supplies

endorse his order: "U-8 Certified under CMP Regulation No. 6, 115 pounds Copper 2Q52." If 390 pounds were required, the endorsement might be: "U-8 Certified under CMP Regulation No. 6, 200 pounds Copper 2Q52—190 pounds Copper 3Q52." Note particularly the absence of the "DO" prefix; this distinguishes between a "rating" and an "allotment."

The owner, contractor, suppliers, and any others involved in the transaction are all held accountable under heavy penalty for any intentional violation of the regulations. The owner is presumed to know what his limits are and to maintain records to insure that he holds his purchases within those limits. Others may rely on the owner's endorsement except where there is obvious violation of regulations.

On construction projects for which self-allotment is properly made, the purchaser is authorized to apply his rating for the purchase of manufactured products. Thus, the purchase order for the fire-alarm project would also show the following: "Do-U-8 Certified under CMP Regulation No. 6."

Special Applications

A specific allotment (for projects exceeding the self-allotment limits) may be secured by application to NPA. For fire-alarm and police-signaling projects, application is made on Form CMP-4C. This form serves the dual purpose of applying for (1) authorization to commence construction, and (2) an allotment of controlled materials.

The application (four copies in all) must be filed by the owner, except when he authorizes another to file for him. The application may be filed before the contract is let, if desired. Postcard Form CMP-51, filed with the application, will be returned by NPA bearing government reference numbers for use in future correspondence. The approved application, containing the allotment, sets up the quantities the owner is allowed and the quarterly period or periods in which the allotments may be obtained. The approval (or rejection) is sent direct to the owner, who should promptly notify the contractor or other who has filed in the owner's behalf.

The endorsement of the purchase order will be similar in form to that for self-allotment, as described above, and should show both the rating and the allotment. The allotment must be exactly as authorized by NPA, both as to quantities and as to quarters.

In CMP Regulation No. 5, NPA has set up procedures whereby a municipality may obtain products and materials to maintain an existing plant and facilities in "sound working condition" and make minor capital improvements. This regulation divides purchases into these main classes: (1) maintenance, repair, and operating supplies, (2) minor capital improvements, and (3) installation of materials.

"Maintenance" means the minimum upkeep necessary to continue a plant or facility in sound working order. Each class is intended to permit purchase of repair parts of maintenance items—but *not* to allow replacement in whole of any equipment. "Operating supplies" mean any "expendable" item, costing not over $50 and normally consumed in one year. For example, in the case of a fire-alarm system:

(1) "Maintenance" would cover the replacement of a box mechanism if the old mechanism were beyond repair. It would not permit the *complete* box to be replaced.

(2) "Repair" would cover requirements for parts for repair of the box.

(3) "Operating supplies" would cover purchase of steel files, soldering irons, or other tools carried on the books as current expenses, and not capitalized.

Minor capital additions are allowable, provided the total cost (excluding purchaser's cost of labor) does not exceed $1,000 for each such addition. No capital addition may be subdivided to bring it within this provision. Where this capital addition requires construction, MRO may not be used; CMP Regulation No. 6 for new construction will apply.

A fire-alarm box could thus be obtained under this provision of MRO for replacing an obsolete, unworkable box.

The "installation" provision of MRO is intended to allow means for setting up or relocating machinery, equipment, etc., for connection to an existing plant or facility. Should it be necessary to move a fire-alarm switchboard, this section of the regulation will allow the purchase of copper wire and other materials for the purpose. A limit of $1,000 is fixed as the cost for *all* required materials; not more than 200 pounds of copper and 2 tons of carbon steel may be used for such purpose.

Special Assistance to Municipalities

A special department has been set up at Washington to assist NPA in its handling of municipal applications. This department is properly addressed:

Office of Civilian Requirements
Government and Public Service Division
Room 5116
Department of Commerce Building
Washington, D. C.

Director of the department is Thomas Burke; William Underwood is Deputy Director. This department does not handle original applications; these should be sent to the NPA office appearing on the forms. Mr. Burke's division is anxious to be helpful in following applications which have been filed. For this purpose, it is advisable to send there a copy of any correspondence to NPA relating to the application; a copy of the application itself is not needed.

Pittsburgh Welcomes Gripes from Residents

THE CITY OF PITTSBURGH, PA., now welcomes complaints from its residents. A new bureau of public gripes — known officially as City Service Center — has been organized to channel complaints to the right departments and to follow up on corrections.

All complaints now come into the City Service Center office where they are posted on special forms and forwarded to the proper department for action. Carbon copies are kept to check up on action taken on the complaints received. Since City Service Center employees do not come under any department, they can let the chips fall where they may without fear or favor.

While putting pressure on the various municipal departments, the new service also helps to take a load off their shoulders. Through receiving the complaint information on brief forms, the department officials can attack their problems better and more quickly than if their time is occupied in hearing gripes over the telephone.

Most of the calls are of a routine nature — clogged sewers, faulty water meters, uncollected garbage, neighbors burning rubbish . . .

The new center will operate with a 10-man force around the clock. In fact, the new center expects soon to provide up-to-the-minute weather reports and other information of a more pleasant nature—where to buy tickets for civic events, whether the ice on the river is thick enough for skating, and so forth.

DESIGN AND CONSTRUCTION OF

Outdoor Shuffleboard Courts

By HAROLD L. CURTIS
Landscape Architect, Member
American Society Landscape Architects

IN 1940, some 226 cities and towns reported that they were operating public shuffleboard courts. By 1950 more than 455 communities reported that they were providing this type of playing court for residents in their communities.* Does not this remarkable growth in popularity point up the need for adequate knowledge of sound principles of design and construction?

Twenty years ago this game was little known to the American public, except for those taking holiday cruises. Nowadays, the most popular sport of all for those past middle age is outdoor shuffleboard, according to reports from the Recreation Department of the City of St. Petersburg, Fla. That city has three thriving shuffleboard clubs, one of which is reported to have more than 7,000 members. Ranging from 40 to 80 years of age, members keep the courts busy day and night.

For men and women in a late period of life, the problem of "what to do" with oneself is often of acute importance. A man may find that retirement and loafing is not the most desirable thing in the world. A grandmother with no family to care for and no house to keep up will be at loose ends for something to keep her busy.

Outdoor shuffleboard is a unique game. It is easy to learn and to play, so that the beginner is not frightened off, and yet it can be developed into a game of great skill and competitiveness to hold the interest of all.

Like the sport itself, building a single court or a battery of courts is not a complicated thing, as this article will show.

Orientation and Location

Important is the orientation or placement with respect to the sun. The long dimension of the courts should always be north and south. As the finished surface of these courts is always polished to a high degree, reflection of the afternoon sun on these smooth surfaces would be very undesirable.

Location of these outdoor courts in a public recreation area should be given careful consideration. While they need to be protected from winds and blowing dust, yet they must be sufficiently removed from buildings and trees that their shadows will not be thrown on the courts. Shadows interfere with players trying to see the opposite end of the courts, i.e., trying to see the playing lines which determine the scores of each team. Again the courts should have sufficient space around them to allow for hard-surfaced walks and spectator areas surrounding them, as well as for walks leading away from the gates.

Where a combination locker and shelter building is contemplated, space should be provided at the north end of the courts where its shadow will not fall on the playing surfaces. It is generally set far enough back to leave the walkway open and a space in the clear for the players' benches in the 4-foot end zone, adjacent to but not on the playing surfaces.

Three other important general features affecting the design and construction of outdoor concrete shuffleboard courts are grading, drainage, and dimensions or size of courts. In selecting the site, care needs to be exercised to see that low swampy

Three of five courts have been poured and are being given a finishing treatment. Playing surfaces are poured first, then the gutters, the end areas, and finally the walks. A minimum of four days should elapse between adjacent concrete pours. Each pour is duo-monolithic, i.e., of two layers of concrete.

San Diego's new shuffleboard courts are completed and in use. Note the venetian-blind sunshade at south end and shelter-locker building at north end.

* Recreation and Park Yearbook, National Recreation Association, 1951.

places or areas where there may be a tendency for adjacent ground to drain onto the surfaces of the courts are not chosen. Special provisions must be made to take care quickly of the run-off following a rain.

In the southwestern states, where soils sometimes have a substratum of adobe, it is highly desirable to see that excess water is removed from the ground immediately surrounding the courts following rains. The penetration of water into the substratum under the courts has frequently caused the sub-soil to expand, resulting in the buckling or lifting of the concrete slabs, thus destroying the smooth, level surfaces so necessary to good play. In the southwestern states it has often proved necessary, when grading, to excavate to some depth and backfill with crushed rock in order to reduce the heaving and displacement which is characteristic of adobe soils when alternately wet and dried.

There are several ways of grading the site for shuffleboard courts. Of course, the finished surface of the playing courts should be absolutely level. The only grading or sloping of concrete surfaces then is confined to the very slight slope that is given the 3-foot-wide gutters that run parallel to and on each side of each court.

For courts in batteries, i.e., placed side by side, the best drainage of the gutters is with the high point midway, resulting in the water running both directions, north and south and out at the ends.

Dimensions of Courts

The standard size of a single outdoor shuffleboard court is 6 feet by 52 feet. When two or more courts are placed side by side, a gutter 3 feet wide is placed on each side of the 6-foot playing court, running the full length of the concrete slab. Outside and adjacent to the gutters a concrete walk is built, varying in width from 3 to 5 feet or more, depending upon the amount of foot traffic it is to get. This concrete walkway surrounds the courts on all four sides, but its width at each end is increased to allow for use by spectators. It may also be built wider to serve as a hard-surfaced floor for a combination locker and shelter building, often necessary in public-park and recreation areas.

In the San Diego courts, five of these 6-foot-by-52-foot playing surfaces were placed side by side, with the usual 3-foot gutter between each court. The total or over-all dimensions are 58 feet east and west and 84 feet north and south, including a 14-foot slab at the north end. Next to the 14-foot spectator area there is the 4-foot "end-area" where the players' benches and the scoreboards are placed. Then comes the 52-foot playing surface, followed by the other "end area" at the south end of the courts, and then a 10-foot spectators' space; all this adding up to the 84 feet mentioned above.

Excerpts from the more important of the special provisions in the plans and specifications adopted in the construction of the new shuffleboard courts built at the Highland-Landis Community Center in San Diego are presented below in summary form.

Provisions

(a) *Work Involved*—The work embraced herein consists of the construction of five reinforced portland-cement concrete shuffleboard courts including the grading, compacting, subgrade conditioning, and the construction of gutters and adjacent walks.

(b) *Work Program*—The work shall be carefully planned and carried out according to schedule. The contractor shall submit a schedule of concrete placing for the approval of the engineer. The courts, gutters, end areas, and walks shall be placed separately. A minimum time of four days shall elapse between adjacent concrete pours. The placing of concrete courts shall be done first, after the subgrade areas have been conditioned and compacted to at least 90% maximum by an approved method.

(c) *Portland Cement Concrete*—One-inch coarse aggregate shall be used and the portland-cement concrete shall have a minimum strength of 3,000 pounds per square inch after 28 days, using a six-sack mix. The top course is one inch thick, composed of one part cement to two of sand.

(d) *Concrete Placing*—The concrete in courts, gutters, end areas, and walks shall be placed as described in the Standard Specifications. One-and-one-half pounds of approved lamp black per sack of cement shall be used in dry mixture for coloring the surface coat. Expansion joints and cold joints shall be constructed where shown on the plans.

(e) *Concrete Finish*—It will be the contractor's responsibility to see that great care is exercised to obtain precision surfaces to true level planes on the playing courts. Surfaces shall be ground smooth to true template with a flat-disc cutting stone and polished to a mirror-like surface. The grinding machine shall be equipped with a carborundum stone of approved grit-stone type. The finish of the gutters, end areas, and walks shall be of a texture matching that of a standard concrete tennis court.

(f) *Curing*—The concrete shall be cured by the "impervious membrane method."

(g) *Expansion Joints*—They shall be constructed as shown on the plans and described in the Standard Specifications.

(h) *Cold Joints*—Cold joints shall be constructed by painting the exposed edge of concrete with one coat of asphalt-joint cement as described in the Specifications.

(i) *Wire-Mesh Reinforcement*—Wire-mesh reinforcement shall comply with the requirements of the American Society for Testing Materials A82-34 and A185-37 with subsequent amendments. Mesh reinforcement shall be tied to the rod steel to insure against independent movement during the placing of enclosing concrete.

(j) *Fences and Gates*—Fences and gates shall be constructed of chain-type wire mesh and tubular-steel frames, as shown on the landscape plans for this project.

(k) *Shelter and Locker Building*—The shelter and locker building is not a part of this contract. When erected at some later date it will be built according to Engineering Drawing #1662-D, and will be placed at the north end of the 14-foot concrete slab which is 4 feet north of the north edge of these courts.

"Come to Our City" Booklets Reported Almost Worthless

THE BUREAU OF RESEARCH at the University of Santa Clara, Calif., has issued a biting report on promotion material put out by chambers of commerce and other community-development groups. As described by *Advertising Age* in its issue of February 25, the 46-page study, called, "Send for Illustrated Brochure," finds that 90% of the "Come to Our City" booklets are so similar in appearance, content, and quality of information given as to be practically worthless.

Of the 298 brochures examined by the bureau, the titles, texts, and pictures could often be interchanged. Communities were generally described as being in the center of rich and growing areas or at the "gateways" to such areas. All stressed "livability" or the more common phrase "better living." Photos of Main Street looked much alike. Local climates were "mild" or "temperate," whether the community was in Texas or New England.

As one result of such brochures, the study quotes comments to the effect that little attention is paid to them by company or plant executives. The research bureau stressed the importance of not spending all the printing budget on a brochure, and that follow-up pieces are essential for successful promotion. It also described some of the exceptional brochures examined which "while different from each other, are mostly simple in style and arrangement—with fresh-sounding titles, well-selected pictures, good maps, and smooth-reading text." The use of frankness was also noted as an effective device.

10,000 New Kilowatts for 7,000 People

By A. G. BARDWELL, Jr.
Stanley Engineering Company
Muscatine, Iowa

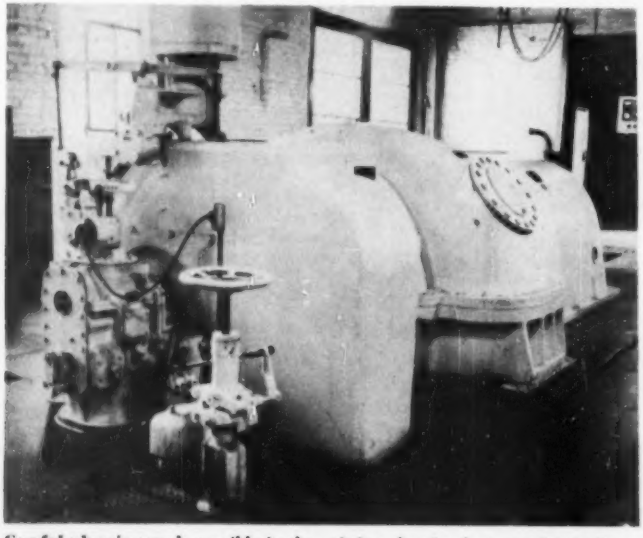
Atlantic, Iowa, builds additions to its electric plant to complete a program deferred by World War II

The new cooling tower and revised power plant at Atlantic, Iowa.

ATLANTIC, IOWA, with a population of approximately 7,000 people and industry, maintains a constructive and responsible attitude toward the area it serves. One of the many features which evidence this is the management of the municipal electric-power plant. The plant has been owned and operated by the city for over 20 years under the direction of a Board of Trustees consisting of three members appointed by the Mayor. The term of each appointment is six years and the expiration of each term is separated by two years from prior and subsequent expiration and appointment. This assures a continuity of membership and planning and development.

Prior to World War II, the plant consisted of three turbine-generator units of 750-kw, 1,250-kw, and 1,500-kw capacity, all of which were designed for operation at 200 pounds' pressure and 550°F total temperature steam at the throttle. Steam for these units was supplied by two 20,000-pound-per-hour steam-generating units.

During World II, the Board of Trustees determined that it needed additional steam-generating capacity, but they had to postpone the installation of a new 60,000-pound-per-hour steam-generating unit until after the war. This unit was originally installed to produce steam at 225 pounds' pressure and 550° F total temperature, and was designed for future modification which would enable it to operate at 425 pounds' pressure and 750°F steam temperature.



Careful planning made possible in the existing electric plant at Atlantic, Iowa, the installation of this turbo-generator designed for three-phase power.

Plan for Future Development

Because of general obsolescence of the 750-kilowatt unit, it was decided that the new unit would occupy the space previously occupied by this turbine. It was also considered desirable to establish a pattern for future development of the plant.

The basement or first floor remained essentially at the same elevation. The operating floor for the new turbo-generator was raised 4 feet above the existing operating floor and 18 feet above the basement floor. The room was arranged so that units up to and including those rated at 1,000 kw may be installed with the center lines of units in parallel. The installation of larger units may necessitate the arrangement of center lines at right angles to those of previous units.

Revised for 3-Phase Power

Although the existing turbine-generating equipment, station-service equipment, and distribution system were arranged for two-phase power, the new 3,500-kw turbine-generator unit was designed for three-phase power. The conversion of the distribution system along with certain station-service equipment is current-

ly being accomplished and will result in a more efficient and flexible installation.

The switchgear, added in conjunction with the new 3,500-kw turbine-generator unit, was located in an enclosure immediately in front of the new turbine-generator unit. This is Westinghouse switchgear rated at 5-kw and having an interrupting capacity of 150,000 volts.

New Cooling Capacity

The cooling-water system for the condensers is of the header type, arranged to take water from the adjacent creek by means of circulating water pumps located in the building and to discharge the water through the condensers back to the creek. During periods of heavy runoff from the watershed which feeds this creek, the concentration of water-borne debris is high. Prolonged dry periods make the flow periodically insufficient. These two characteristics, and particularly the latter, make it necessary to use a stand-by cooling-water system. A spray pond located near the plant had previously provided this, but did not have enough capacity for the new generation equipment. It was determined that it was more economical to abandon the spray pond and provide a mechanical-draft cooling tower, supplied by the Marley Company, instead. The tower was arranged in such a manner that as additional cooling capacity was required for the plant, the tower basin and cooling water piping to and from the tower could be extended without a major revision until the dependable capacity of the plant exceeded approximately 18,000 kw. This load probably will not be reached before 1975 or later.

Feedwater System Increases Plant Efficiency

The feedwater cycle for the new 3,500-kw unit is arranged to pump condensate from the condenser hotwell through the condensers of the steam-jet air ejector. A portion of the condensate passing through these air-ejector condensers is recirculated at low loads to keep the temperature rise across the air-ejector condensers within allowable limits necessary to maintain a suitable vacuum in the main condenser. The feedwater not recirculated is then directed to a low-pressure closed extraction feedwater heater, hence to a de-aerating heater. The heater pressures are not maintained at a constant value, but are allowed to fluctuate with the extraction pressures available resulting from the load on the turbine. This arrangement eliminates the necessity of providing a large pressure-reducing valve and increases the efficiency of the plant.

A pressure and de-superheating station is arranged in such a manner that 225-pound pressure 550°F steam may be supplied from the higher pressure steam-generating unit to the 1,500-kw and the 1,250-kw turbines under emergency conditions. There is also the necessary interconnection piping which will permit the condensate resulting from this use to be pumped back into the high-pressure system.

Previously, only internal treatment of boiler feedwater had been used. However, when the steam generating unit was operating at a higher pressure and temperature, the magnitude of the blow-down necessary and the possible carry-over of solids (particularly silica) made external treatment of make-up water necessary. Since the raw water is high in silica content and total hardness, a Cochrane, hot process, lime-soda softener provided the most satisfactory solution at this time. The already crowded boiler room and turbine room dictated the erection of a small room adjacent to the boiler room portion of the plant to house the water-treatment equipment and chemicals.

The turbine-generator equipment was provided and installed by the General Electric Company. The surface condensing equipment was provided and installed by Westinghouse Electric Corporation. The mechanical work and building work was done by the Winger Construction Company, of Ottumwa, Iowa. The electrical work was done by the Commonwealth Electric Company, of St. Paul, Minnesota. The design and supervision of construction was done by Stanley Engineering Company, of Muscatine, Iowa.

Is State Regulation of Municipal Water Utilities Good Practice?

APPARENTLY IT IS in Wisconsin, where all water utilities, whether owned municipally or privately, are under the regulation of the State Public Service Commission. W. F. Whitney, Commissioner for this organization, has letters expressing friendly appreciation of the Commission's work by many of the 382 municipally owned water works in Wisconsin. Some have stated that they would not want to operate without knowing that the Public Service Commission was back of them, supporting them when they were right, criticizing them when they were wrong.

The main purposes of regulating water utilities, Mr. Whitney states, are to assist in the promotion of adequate service; establish reasonable rates for water service; eliminate free service and discrimination; maintain a uniform system of accounting; provide for utility-property valuation; investigate customer complaints; grant authority to utilities to transact business, and extend service when the need for such service exists.

The commission fixes standards for the measurement of water pressure, and prescribes reasonable regulations for wells, pumps, water transmission, and service. The water rates most commonly used in Wisconsin consist first of a minimum figure, covering a service charge, and a block schedule to cover water used.

The commission insists on a municipal fire-protection charge, on the policy that no municipality should receive *free* water service. These rates are based upon cost of service, and usually are made up of a fixed sum plus specified additional costs as additional hydrants and hydrant connections are installed. These costs vary from an average of $1 per capita in the larger cities to $5 per capita in smaller communities.

In fixing rate levels, the commission relies on a rate base consisting of original cost of property and plant, less accrued depreciation, plus an allowance for materials and supplies and working capital. In view of the unusual stability of water utility operations, the commission usually permits about a 5.5% rate of return.

When the commission investigates a particular utility, the cost of such investigation is assessed directly to the utility or utilities involved. However, the amount so assessed in any calendar year may not exceed 0.8% of the gross revenues for the preceding year. Commission costs not charged directly to the utility are met by proceeds from a so-called remainder assessment against all utilities. This may not exceed 0.2% of gross revenues for the previous year.

The commission exercises no control over municipal utility securities. Privately owned water utilities, however, must secure approval of all securities before they are issued. Usually, equity capital of over 50% is required by the commission in connection with bond issues. A ratio of 55% equity to 45% debt is considered desirable.

The commission has staff service inspectors who make routine inspections as frequently as their schedule of work permits. Inspection of water utilities includes a check of pressure, sub-station meters, metering procedure, meter-testing equipment, maintenance of required records, efficiency of operation, and flushing practices.

Commissioner Whitney explained these practices before the recent meeting of the Florida Water, Sewage and Industrial Wastes conference held recently in Daytona Beach.

Urban Progress in Latin America

By ANATOLE A. SOLOW, *Chief, Division of Housing & City Planning, Pan American Union, Washington, D. C.*

Some of the new University City buildings in Panama, designed for tropical conditions by architects De Roux and Berumder. The library is in foreground.

A roof is being placed on one of the buildings in a low-cost housing project under construction in Bogota, Colombia, making use of the Billner system, patented by Vacuum Concrete, Inc., of Philadelphia. The architect for the project is Ortega.

PREVIOUS ARTICLES in this series have described various aspects of urban progress in individual countries of Latin America, such as public-works development, housing projects, earthquake reconstruction, and metropolitan planning. Now, in a year full of dynamic technological, scientific, and industrial development, it seems worthwhile for a moment to sit back and review the general panorama of latest housing and city-planning developments in the Western Hemisphere.

Explosive Growth of Cities

Perhaps the most important single cause underlying many of the problems of Latin American cities is their tremendous growth during the past decade. Figures from the 1950 Census of the Americas are slowly coming in and offer an impressive panorama. Mexico City, with 2,940,000 people as against 1,800,000 in 1940 and 1,000,000 in 1930, has become one of the largest cities of the Western Hemisphere. Rio de Janeiro's population has increased from 1,700,000 in 1940 to 2,300,000 in 1950. Bogota has had more than a 50% increase in population since 1945, reaching 643,000 in 1950.

The capitals of the smaller countries have shown an even more alarming increment. Guatemala City has grown 73% in 10 years to 283,000; Tegucigalpa in Honduras 100%. Yet these two cities have no adequate city-planning offices through which orderly development and growth could be guided. Capital cities have traditionally played an important role in Latin America, where governments are more centralized. But in Brazil, Sao Paulo has increased to over 2,000,000 people and at a far faster rate than the capital.

Although increases are due to a combination of factors—natural increase, migration from Europe, internal migration—it is the accelerated rate of rural-urban migration which in the long run may have the greatest consequences. The resulting problems as seen in terms of entire squatters' shack towns springing up overnight and pressure on already inadequate utility systems and public-transportation facilities, are of such proportions as to cause the gravest concern to municipal authorities and public-works agencies, which are never quite able to keep up with the avalanche of people coming to the cities to live, in spite of all possible remedial measures.

Significant progress has been made

in developing urban planning policy and legislation, and several major cities have undertaken the preparation of new or revised master plans. Centralized government has been characteristic in many South American countries, and consequently there is a tendency to establish planning at the national rather than local level. Sometimes this has presented advantages, especially where the shortage of planning technicians has not made it possible to support more than one competent planning office. Such national agencies are now well established in Peru and Venezuela. In the former country, the Oficina Nacional de Planeamiento, under the able direction of Luis Dorich (M.I.T. graduate in city planning), has completed and published the preliminary master plan for Lima, and is studying regional problems and master plans for several other cities, especially Cuzco, the famous historical city and national art shrine, severely damaged by an earthquake in 1950.

In Venezuela, all urban and regional planning has been concentrated in the Comision Nacional de Urbanismo. Due to the oil boom in that country, substantial financial resources are available to the government for public works and building construction. Among the most impressive projects now almost complete is the Avenida Bolivar, perhaps the biggest single job of urban construction except for the U.N. headquarters in New York City. Part of the Caracas master plan, Avenida Bolivar has an underground auto expressway four levels down, 12 blocks long, two 1,000-car underground garages, a transit terminal for 80 buses, several levels for pedestrians, shops and office buildings. A transport and traffic study for Caracas was prepared in 1948 by IBEC Technical Services Corporation of New York, N. Y. For the past two years Francis Violich, well-known city planner from San Francisco and author of "Cities in Latin America," has been acting as consultant to the Comision de Urbanismo in an attempt to systematize planning procedures and to focus attention on such essential elements as basic surveys, land-use, zoning, and density control.

Municipal Master Plans

At the municipal level, Quito, the capital of Ecuador, published its master plan in 1949 and is implementing it through its city-planning department. Among recently prepared master plans that of the City of Monterrey in Mexico deserves special mention. In Colombia, master plans for Cali and Medellin have been prepared (and published) along extremely advanced lines with the assistance of Wiener and Sert, who have also acted as city-planning consultants, together with Le Corbusier, on the master plan for Bogota. Here, the first stage—the Pilot Plan—has been adopted by the municipality and has given rise to numerous local discussions of its pros and cons.

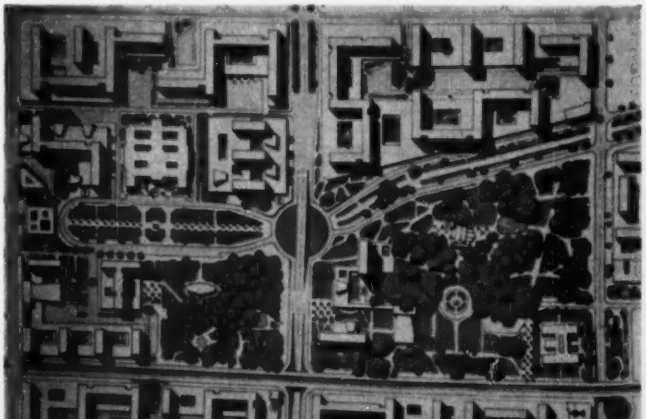
San Jose, the capital of Costa Rica, has established a modern city-planning office in the municipality, which can well serve as a model for all Central American countries. Following a report prepared by the Pan American Union, the office was established with the cooperation of the Division of Housing and Planning of the PAU, under the direction of Cesar Garces, Colombia city planner. Modern subdivision regulations, the first in Central America, as well as substantial parts of the master plan, have been adopted.

Acceptance of Neighborhood Unit Concept

In the past few years the advantages and drawbacks of the neighborhood-unit concept have been much discussed in United States professional circles. In Latin America great strides have been made towards accepting the neighborhood as a basis for housing design within the larger framework of urban development. Public-housing agencies in particular have recognized the manifold advantages inherent in large-scale planning of residential areas: economies in land and utility development of large tracts of land; cutting down on length of paved streets, curbs, gutters and sidewalks; reduction of accident hazards due to elimination of through traffic, and grouping of schools, playgrounds and community facilities within easy walking distance of homes. These concepts have been translated into reality by an increasing number of housing agencies which have built projects in the form of neighborhood units for anywhere from 800 to 2,500 families.

Neighborhood Unit No. 3 in Lima, Vista Hermosa in Panama, and Muzu in Bogota have been illustrated in previous articles. In addition, a most interesting project is almost completed in Medellin, Colombia (designed by Wiener and Sert). In Brazil, the Housing Department of the Municipality of Rio de Janeiro, directed by an able engineer specializing in housing, Miss Carmen Portinho, has almost completed the Rialengho housing project consisting of apartment groups, a public-health unit, a shopping center, a school, a gym and swimming pool, and beautifully equipped playgrounds. The entire group, designed by architect Ready, is in the best modern style of well-known Brazilian contemporary architecture. Other Brazilian cities have followed suit. In Sao Paulo the Conjunto Residencial-Cidade Jardim is a model of neighborhood design, and in Porto Alegre to the south, the Institute dos Industriarios, one of the five large national social security agencies which invest their funds in housing, has completed a residential unit for approximately 2,000 families with intermixed dwelling types ranging from 3-story apartments to single-family homes.

There is no question that housing is emerging as one of the



The plan for the new civic center in Lima, Peru, integrates new buildings with those that exist. New structures proposed are ministry headquarters for the departments of (1) Interior; (2) Navy and Army; (3) Education; (4) Agriculture, and (5) Foreign Affairs. Existing buildings include (a) Courthouse; (b) Ministry of Public Works; (c) Italian Museum, and (d) other buildings. P. L. Wiener and J. L. Sert of New York City are consultants for this project.

A gymnasium under construction in a new neighborhood housing unit, "Pedregulho," is being built by the Housing Department of Municipality of Rio de Janeiro, Brazil. The architect responsible for the design of project is Ready.

fundamental issues of modern life. Since World War II, the governments of all Latin American republics have greatly intensified low-cost housing construction. Most countries now have government agencies at the national level dedicated exclusively to housing. Some countries have had such agencies supported by national legislation for a considerable time, such as the Caja de Habitacion de Chile, the Instituto de Credito Territorial in Colombia, the Instituto de Vivienda Economica in Uruguay. Other have established them in more recent years, such as the Banco Obrero of Venezuela (reorganized in 1939), the Corporacion de la Vivienda in Peru (established in 1946), the Banco de Urbanizacion in Panama (1944), the Instituto de Vivienda Urbana of El Salvador (1951), the Fundacao da Casa Popular in Brazil (1946), and the Banco Hipotecario of Mexico.

National-Housing Legislation and Long-Range Programs

Some of these countries have not only established agencies, but have passed sound national-housing legislation and have developed national long-range-housing programs. This has been done by Colombia and Peru as well as by El Salvador which this year is allocating approximately 10% of its national budget to the housing agency and plans to build approximately 1,000 dwelling units per year. It has also been done by Venezuela, which is launching a vast national-housing program through the Banco Obrero.

In spite of this effort, public housing is unable to finance construction programs large enough to keep up with the population increase and with the shack towns that are mushrooming on the outskirts of cities as a result of squatters migrating from the rural areas.

In many South American countries the process of industrialization is progressing at a breakneck speed, and the establishment of major private industries is matched by large-scale public-works programs financed by the governments and by such loans as have been obtained from the International Bank, the Export-Import Bank, and others.

Need for Improved Transportation Systems Great

In a few countries a coordinated national plan of public-works development, such as Colombia's Currie Plan, has been prepared and is being implemented step by step.

The need for improving transportation systems, especially highways, has become apparent and urgent. In 1940 it was estimated, for example, that in Chile out of 28,000 miles of roads only 212 were adequately paved according to standards used in the United States. In Ecuador roads are so bad that the life of a tire is estimated at 6,000 miles. However, the Peruvian government has adopted a 6-year road program of $84,700,000 for construction and paving of approximately 4,500 miles of roads. Colombia has embarked on a 3-year $36,000,000 national-highway program to provide all-weather roads connecting the Caribbean and Pacific ports with the principal agricultural areas and industrial centers of the Andean highlands. For this the World Bank has authorized $16,500,000. In Nicaragua a $4,000,000 road-construction program is being studied, especially to link the Pacific with the Honduras border. Honduras in its turn has outlined a $20,000,000 highway-development plan to open up hitherto inaccessible regions.

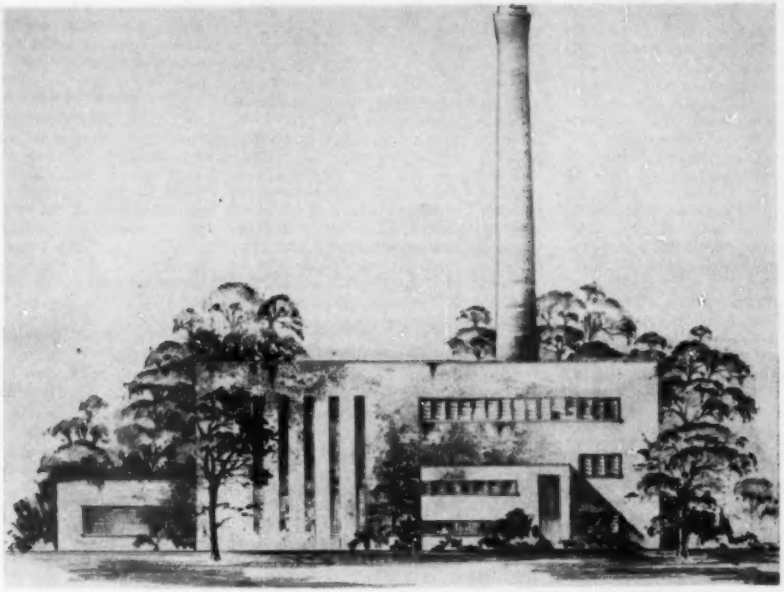
Airport construction is coming in for its share of attention, especially in such countries as Colombia, where air transportation plays perhaps a greater role than does any other form of internal transportation. It is worth noting that Avianca, the Colombian airline, handled more cargo in 1950 than any other airline, and almost double that of Pan American Airways. The 96,000,000 pounds carried represent an increase of 83% over the 1949 record. No wonder, therefore, the government is preparing plans for four large international airports at a total cost of $8,000,000. Mexico City's new $4,000,000 air terminal and runways will be finished shortly. Costa Rica is seeking foreign capital for a new international airport to be located 10 miles outside the capital. Both Honduras and El Salvador completed new air terminals, and Buenos Aires has one of the most luxurious modern air terminals and includes a hotel and other auxiliary facilities.

Another important and interesting aspect of recent years is the springing up of modern university cities in the vicinity of Latin American capitals. Brazil is beginning a $5,000,000 program for what might turn out to be the most advanced university city in design, to be self-contained on an island outside Rio, but linked to the mainland by a bridge. A view from the road linking the new Tocumen Airport to Panama City discloses a complex of new university buildings designed specially for tropical conditions. Perhaps the most ambitious project is to be found in Mexico City, where the National University is rising with a 15-story science building, dormitories, a library, sports fields, and a stadium for 140,000 spectators. Planned for a total of 25,000 students its initial cost is $11,000,000.

Increased Production Shown

Other important public buildings of interest to city planners and municipal engineers are, for example, the new Hotel Panama, the Caribe Hilton Hotel in Puerto Rico, South America's first 8-floor parking building in Sao Paulo, Brazil, and the huge new $5,000,000, 14-story hospital of the Social Security Agency in Lima, Peru, on which New York's Edward D. Stone (also Panama Hotel) is architectural consultant.

In order to keep up with the magnitude and pace of such construction, local building materials industries, especially cement production, are expanding rapidly. In recent years Colombia has exported cement to the United States; Brazil's 1950 production reached 1,400,000 tons; and Venezuela will be self-sufficient in 1953 if expansion plans are realized to raise still higher last year's production of 500,000 tons (300,000 tons in '49).



A sketch of the first of the new incinerators to be erected for Milwaukee.

How We Set Up Our Incinerator Program

By W. C. WEBB
Assistant Superintendent
Bureau of Bridges and
Public Buildings
Milwaukee, Wis.

THE PROBLEM of doing something about existing garbage-disposal facilities has confronted Milwaukee for some time. Should the city rebuild existing incinerator plants or build new facilities? If new facilities are to be built, should they again be incinerator plants? And if so, where should they be placed.

Before deciding on new incinerators, we analyzed all possible alternates: composting, reduction, grinding and digesting with sewage, and the sanitary landfill. We visited plants and studied reports of consultants, university research, and the work of other communities. Proponents of individual methods were invited to present their views. After we evaluated all that we had seen and learned, Commissioner of Public Works Walter M. Swietlik made the decision to continue using incineration without closing our eyes to developments in other methods. Incineration is a tried method, it is quick and sanitary, it will help solve the combustible-refuse-disposal problem — especially of the future, and it will allow us to utilize a portion of our present facilities.

Milwaukee now has two incinerator plants burning wrapped garbage. Both are on the same plot of ground located immediately south of the downtown area at the harbor entrance. One is a Heenan Destructor plant built in 1910, with a capacity of 300 tons per 24 hours, and the other is a Goder plant built in 1930, with a capacity of 225 tons per 24 hours. The Heenan Plant has waste-heat boilers which produce steam for plant space heating and electrical-power production. Some of the electric power is used to meet plant requirements, the rest is sold to the local utility. In 1950, the total gross income from the production of electricity was about $18,000, including sales at $12,396. This does not fully justify the additional expense to produce this electricity over simple incineration. We realize the equipment is old and that the city is at a disadvantage in marketing the power because of its inability, mainly from a labor standpoint, to produce power continuously. The plant operates only 16 hours a day for 5 days a week. To produce electricity profitably, one must operate economically and have a profitable market for that electricity.

Although both plants are of the bin-and-crane type, they have insufficient pit storage. Triple handling is necessary at the Heenan plant to get the garbage from the trucks to the furnace-charging holes. With storage pits and truck dumping out in the open, it is impossible to keep paper and other debris from littering up the grounds most of the time. There is no quenching of ashes and practically no dust control in the ash-removal areas. Temperature control is difficult and refractory maintenance very high. Both plants should either be rebuilt, the older one from the ground up, or be completely abandoned.

Plant Locations Selected

After deciding to proceed with incineration, the decision was made to build additional facilities on a regional basis. One plant was to be erected on the north side of the city and another on the southwest side. These,

together with one plant being rebuilt, at our present location, would provide reasonable balance in hauling distances and would allow a further balancing of hauling distance at some time in the future when we would add a fourth plant on the west side slightly north of center. Milwaukee has been annexing new areas on its perimeter during the past several years to such an extent that our present maximum garbage-hauling distance is about 12 miles. In addition, a majority of garbage trucks have to go through our downtown shopping districts to discharge their loads.

The city was fortunate in acquiring a desirable site for its north-side plant after several months of intensive searching. It is immediately north of Lincoln Park, a major unit of the Milwaukee County Park System, and on the east side of North Green Bay Avenue, which also carries Wisconsin State Highway No. 57. The entire site, about one block along Green Bay Avenue and about six blocks in depth, is about 40% low enough to receive fill which, in turn, will provide economical ash disposal for some time to come.

Park Commission Recommendations

Prior to acquisition it was agreed, upon recommendation by the County Park Commission and the City Planning Authority of the Land Commission, that the plant would be set back a minimum of 200 feet; that the entire area from a distance of about 100 feet in back of plant and to the street would be landscaped over the entire width, and that the building would fit architecturally into the neighborhood, which is mainly residential in character. Even with these provisions, the City Building Inspector would not issue a permit until the City Attorney rendered an opinion that the city had a right to build such a facility in this residentially zoned area. The opinion in turn was based on the premise that the incinerator plant would not constitute a community nuisance. We had to assure the City Attorney that our new plant would be equal to those plants in other communities which by court test cases were determined not to constitute community nuisances.

How the Bidding was Arranged

The next obstacle came up with the method of bidding we attempted to use. Our original plan was to provide a prospectus stating limiting details and our requirements for prospective bidders. The result would be greater freedom of bidding, without having a large number of details for bid alternates, and the accompanying time factor. Our City Attorney ruled against the prospectus method on the basis of a Wisconsin State Supreme Court decision in 1900 concerning the case of Ricketson versus the City of Milwaukee, which defined the responsibilities of the Commissioner of Public Works to include the determination of definite methods and equipment, including plans and specifications of any facility to be purchased.

We then proceeded with plans and specifications. Our intent was to provide an incinerating plant capable of completely destroying 300 tons of a 50-50 mixture of garbage and combustible rubbish every 24 hours, without nuisance and with a minimum of labor. We further desired to provide decent conditions of environment for the people working within the plant, including plenty of light, minimum odor, reasonable space, temperature control and areas, and surfaces easy to clean and keep sanitary.

Mechanization Required

To obtain a minimum labor factor, we specified equipment mechanized as much as was possible within our budget. Incinerators circular in cross section and having revolving stoking cones and arms fell into that category, as did motor-operated charging gates and dampers. We included instrumentation of all combustion phases and push-button control of all dampers, blowers, charging gates, and the stoking devices. Furnaces were raised sufficiently above grade to allow quenched residue to be loaded directly by gravity into trucks or trailers. Our site is quite level and we decided that having the ash-removal-room floor and tipping floor at grade with only the pit below grade would give us the best building when considering first investment as well as maintenance operation, and appearance. Anything lower would also have meant sumpage of all water from trucks, from truck washing, and from cleaning. Furnace-charging hoppers are 13 feet square with 5-foot-square openings so that our 2-cubic-yard overhead-crane clamshell bucket can move refuse directly from 350-ton storage pit into the furnaces without any manual assistance.

Tipping-Floor Design

The tipping floor was designed to move trucks through with a minimum of time and effort. The truck scale within the building is at a slight angle in the direct line of truck movement. Unloading docks into the pit are at about a 30° angle for minimum truck turning. Truck washing will be accomplished immediately before the exit doors. Three trucks can have their loads weighed and dumped, be washed (a multi-nozzle squirting down with 150° water at 300-pound pressure), and travel through from entrance door to exit door every five to six minutes.

A generous use of glass block and window sash will provide a good supply of natural light. Artificial light is planned to be of sufficient intensity to meet the activity requirements of each area, and will range from about 12 foot-candles on the tipping floor to 50 foot-candles in the offices. Working areas around equipment will have 15 to 20 foot-candles.

Combustion Air

All of the combustion air will come from the exhaust of the building ventilation system. A series of exhaust intakes will run along the top of the storage pit, with another series at the top of the crane runway. Unit heaters and ventilators will push air from the opposite side of the building. All air will have positive movement and direction causing any odor-laden air to be removed quickly and pass through the 1,500° F. and higher incinerating chambers, then up and out through the top of the 175-foot stack. The 1,500°F. temperature will remove most odors.

The unit heaters and ventilators will provide adequate controllable and well-distributed space heat in the large areas. Radiant-heat panels and convectors will do an equally good job in the offices and service rooms. We also have seriously considered using two 25-ton ice-capacity waste-heat water chillers which have recently been placed on the market. They, with heat exchangers, would provide cooled air for complete air conditioning of the offices and service rooms plus cooled air to lower the temperature in one or two work areas. The latter would mainly have psychological value. The basic reason for the consideration is that these waste-heat refrigerating units would help keep a more constant heat-demand load on the incinerator breeching for a better refractory maintenance condition. At the present, however, the decision is not to add the refrigeration. The total number of days in the Milwaukee area when air cooling is desirable is rather small, the health factor of contrasting adjacent temperatures is questionable, and the possibility of criticism, determined the present decision.

Low-Pressure Boilers

The source of heat for our space heating as well as for domestic hot water and truck washing are two 150-hp low-pressure-steam, waste-heat boilers. Boilers will have auxiliary oil burners using waste oil the city receives from filling stations to cover space heating while incinerators are not in operation. We again feel we will be able to operate only two shifts per day, five days per week. Although our present waste-heat utilization is not profitable, we estimate that fairly automatic low-pressure boilers without generators would take little skilled manpower. Consequently, an operational saving more than compensating any differ-

ence in the original cost will result.

The incinerator combustion air is to be pre-heated by separate mixing chambers to which will be introduced a sufficient amount of 1,500°F. flue gas to produce a final air temperature up to 400°F. Recording thermometers and push-button, energized motor-operated dampers will provide reasonably good control.

Glazed-tile walls, wherever feasible, covered intersections of right-angle surfaces; well-smoothed concrete as in floors; avoidance of pockets as in open rolled section columns, and good drainage with a sufficient number of drains are included to provide an optimum of sanitation. Ashes are fully quenched in leak-proof hoppers before being discharged into trucks. All equipment, especially electrical, is specified to resist water flushing. Slightly negative pressure ventilation will provide a positive removal of dust and odor-laden air. All of the above, plus other minor sanitation details, we feel will provide the facilities for not only a clean, but also a nuisance-free plant.

Bids were opened for the incineration equipment in its entirety on December 7, 1951. The contract was awarded to the Nichols Engineering and Research Corporation, of New York City, which is scheduled to start delivering its equipment to the site in August of this year. The plans for the housing structure are complete except for a few details. Work will begin on the building after the frost is out of the ground. Every effort is being made to be in operation at the commencement of the spring season in 1953.

High Courts Uphold State Urban-Redevelopment Laws

THE WAY is being cleared for more cities to get urban-redevelopment programs underway, as a growing number of state courts uphold the constitutionality of urban-redevelopment laws.

According to the National Association of Housing Officials, three of the four state-supreme-court rulings handed down in the last year on the constitutionality of state-urban-redevelopment laws have been favorable. This brings to seven the number of states in which the high courts have held the laws constitutional. Meanwhile, test cases are planned or are pending in five other states—Illinois, Ohio, Rhode Island, Florida, and Minnesota.

Michigan

Michigan's supreme court was the most recent to okay cities' participation in urban-redevelopment programs. Upholding the power of Detroit to condemn slum property and sell it to private builders for redevelopment, the Michigan court said that "the public purpose of slum clearance is in any event the one controlling purpose of the condemnation."

An early 1952 decision by Illinois' supreme court affirmed an earlier decision upholding constitutionality of the state's 1947 blighted-areas redevelopment law. The decision resulted from an appeal filed by residents who protested the condemnation of property in a Chicago slum area by the city's land-clearance commission. The commission's authority to sell cleared land to private enterprise for redevelopment was also upheld. Another case will soon test the commission's right to condemn predominantly open blighted land for redevelopment.

Last year, Tennessee's supreme court upheld on all counts the constitutionality of legislation empowering Tennessee housing authorities to condemn slum areas and, after clearance, to sell or lease them to private redevelopers.

A Texas court of appeals' ruling, that housing authorities have no power under the state's housing law to acquire and clear slum areas for sale to private developers as contemplated under the 1949 housing act, was made binding in 1951 when the supreme court refused to review the case.

Pennsylvania

Pennsylvania's urban-redevelopment law, as applied to a plan for redeveloping a blighted commercial and industrial area with modern office buildings, was found constitutional in 1950. Basis for the court test by the plaintiffs was that designation of an area as "blighted" did not conclusively establish it as such and, further, that erection of residential structures on the redevelopment area was required in any project under the law. It was also argued that commercial redevelopment of an existing commercial area does not fall within the law except as it may be incidental to the redevelopment of a residential area. However, the court ruled that a city-planning commission's determination as to blight is not subject to judicial review in the absence of a showing of bad faith, and that the law covers commercial redevelopment of an existing commercial area.

A 1948 New Jersey court decision held its urban-redevelopment law constitutional on the basis that public aid for redevelopment and housing is a public purpose even though the housing is built and operated by private owners. And an advisory opinion by Alabama's supreme court, in 1950, upheld the constitutionality of a law giving housing authorities power, in addition to that contained in the state housing act, to engage in redevelopment programs under the 1949 federal housing act. New York's redevelopment law was found constitutional in 1943.

In Ohio, a test suit of the state's 1949 urban-redevelopment law is planned for this spring so that cities can issue bonds to finance the purchase and clearance of lands for redevelopment. Florida and Minnesota also have similar tests planned.

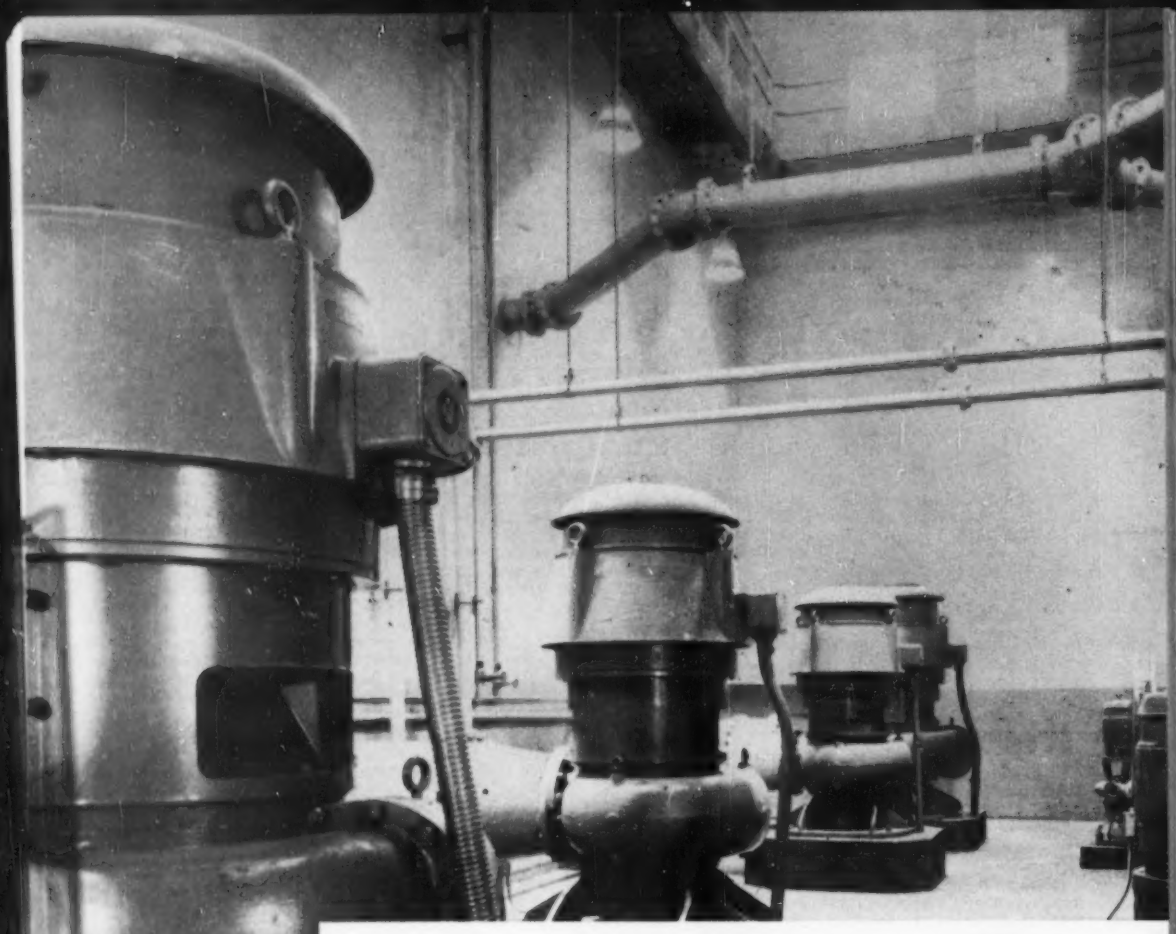
Rhode Island's redevelopment laws have had stormy existences. The original 1946 law was, in effect, declared unconstitutional in 1949 by a supreme court divided opinion. This law was repealed in 1950 and a new one passed, but it was not immediately tested since its sponsors hoped an amendment to the constitution on redevelopment would be approved by a constitutional convention and popular vote. However, the 1951 constitutional convention rejected the amendment and immediately suit was filed declaring that the law violated state and federal constitutions.

A Helpful Hint for Municipal Conferences

THIS EDITORIAL COMMENT from the February issue of *The Western Municipal News*, of Canada, merits consideration on both sides of the border:

Col. E. A. Deacon, Mayor of Crystal City and past president of the Manitoba Urban Association, is not only a renowned wit but a stickler for procedure. At the January convention, over which he presided, he insisted that every speaker give his name and municipality and, of course, this got to be very funny indeed when the stalwarts of the association identified themselves over and over. Just the same, it is a fine idea. A delegate is apt to feel a mile high and very conspicuous when he stands up in a convention, but, as a matter of fact, he is practically invisible. Those sitting behind him don't recognize him unless they know him well; those in front of him have to twist their necks to see him. The lighting in some halls is carefully directed away from the faces of the delegates, which is very comfortable for them, but the people on the platform have difficulty recognizing their dearest friends.

The chairmen of municipal conventions ask the delegates to give their names and municipalities, but unless they are very tough and keep insisting all the way through the convention, delegates slip from the path of virtue and the convention secretary and the press start asking each other, "who was that, who is this, why can't they yell their names out, what do they think we are, mind readers?"



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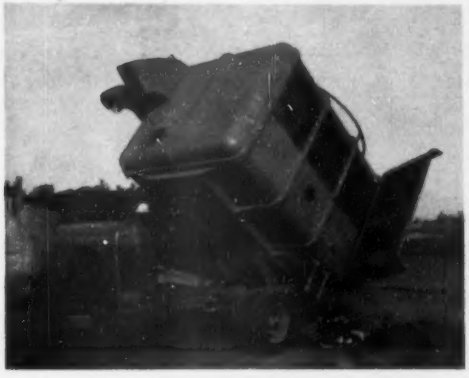
Leaf Blower Collects Roadside Trash

A special design prevents bottles and tin cans from going through the fan when being collected

This is the way the two-compartment blower looks with the end gate open. Bottles and tin cans are trapped in the lower compartment. Paper and other trash are on top.



The trailer is provided with its own dump mechanism to facilitate the discharge of roadside refuse.

NO MATTER HOW MUCH one threatens the driving public, they still will throw trash out the car window—and someone has to pick it up. Out in California, the State Department of Public Works' District 7 has learned how to make this pick-up easy by using the familiar leaf-loader that has become so popular in recent years.

The loader that the district uses is a product of the Good Roads Machinery Company, of Minerva, Ohio. Its suction is strong enough to pick up not only papers but also bottles and tin cans. The unit has its own trailer-mounted 14-yard box which also carries the fan that produces the pick-up suction.

The fan could pass bottles and tin cans through it. However, the fan blades suffered. They would cut up the tin cans and smash the bottles, pulverizing even half-gallon demi-

A quick story of roadside cleanup: left, a littered ditch; center, the blower at work, and right, a clean ditch.

WHERE THE

SEAMAN PULVI-MIXER FITS

IN HIGHWAY, STREET OR AIRPORT CONSTRUCTION

Gravel stabilization to improve country road.
Pulverizing old bituminous road after scarification to reclaim materials for reconstruction.
Mixing for soil-cement highway.
Mixing for bituminous city street.
Constructing macadam subbase prior to laying concrete pavement.
Seed-beds for grass planting on shoulders, backslopes, parkways.
Mixing for bituminous parking yard at shopping center.
Stabilization of highway shoulders.
The SEAMAN Self-Propelled TRAV-EL-PLANT. Completely equipped for precisely controlled application of bitumen or water during mixing operations. 7 ft. mixing width. Gas or diesel powered.
Mixing to construct airfield runways and taxiways.

This FREE book, SOIL STABILIZATION METHODS, modern in every respect, compiled by SEAMAN engineers, gives you complete information on processing methods and on the many uses for the SEAMAN. Ask for Bulletin 25.

The SEAMAN PULVI-MIXER is engineered for high daily output in all mixing operations on the most extensive stabilized construction projects — utilizing any type of binder with any suitable aggregate or soil. In addition, the SEAMAN is profitable in a variety of work that ranges from land clearing to parking lot, driveway or hangar floor stabilization. Low investment, small operating cost and high maneuverability are the reasons for such versatility.

Glance at the applications shown above. Then—put a SEAMAN in your road or street construction plans.

SEAMAN MOTORS, INC.

292 N. 25th STREET MILWAUKEE 3, WISCONSIN

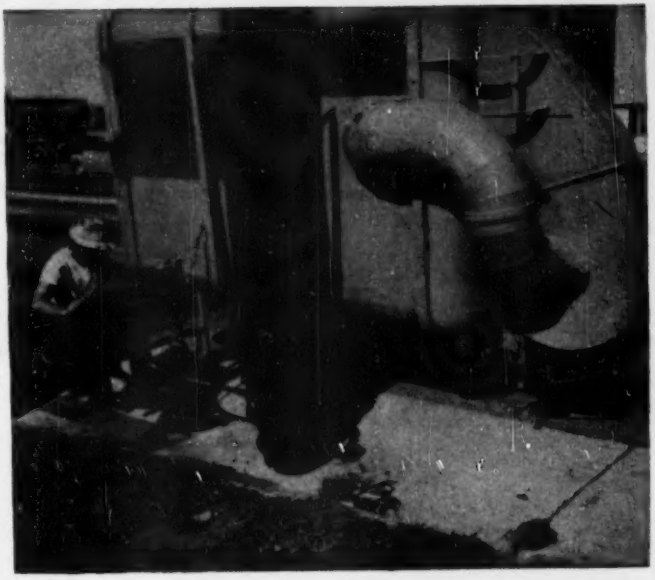
johns; but the blades frequently broke and jammed. So the district shop forces built a "bottle catcher" into the line to relieve the wear on the fan blades.

They did this by building an airtight compartment in the trailer container to trap the heavy material. A suction hose, 10 inches in diameter, leads through this compartment (which occupies about one-third of the trailer) to the fan. The discharge from the fan leads back again to the trailer. Thus the heavy material drops out in the first compartment, and the lighter paper passes through the fan to the receiving compartment.

With this arrangement a certain amount of vacuum was lost from the fan, so the crews mounted a larger fan and rebuilt the pipe connections to reduce friction losses. Now the collector will pick up anything that will go through the reinforced flexible hose.

The present collecting mechanism has the operator located on a seat alongside the trailer where he can move the intake pipe by a specially built set of handlebars. In some areas, crews go ahead to rake the material into a windrow in the ditch.

On one particularly bad section of the Coast Highway, the crews picked up approximately 150 cubic yards of bottles, cans, and trash in three days.



PHOTOS COURTESY CALIFORNIA DEPARTMENT OF PUBLIC WORKS

The operator has a seat to use when maneuvering the suction hose, and push-button contact with the driver. The pipe from the fan draws from the airtight compartment where the large bottles and tin cans are trapped. The suction hose used by the operator enters this compartment from the other side of the trailer.

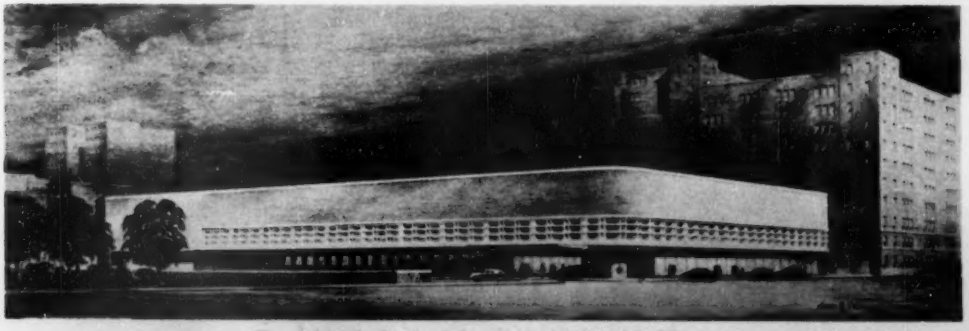
New Airlines Terminal to Speed Passengers to Planes

CONSTRUCTION of New York's new East Side Airlines Terminal Building by the Triborough Bridge and Tunnel Authority is proceeding at a rapid rate. The new building will occupy most of a city block on the west side of First Avenue between 37th and 38th Streets, adjacent to the Queens Midtown Tunnel.

With the construction of the new terminal and the new Brooklyn-Queens Expressway, bus travel time from the new terminal to LaGuardia field will be reduced to 15 minutes. Buses will have easy access to the principal floor of the building where all loading and unloading of passengers and baggage will take place.

Taxicabs will use a special roadway built within the terminal itself with access to 37th and 38th Streets. Passengers alighting from taxis will enter a small lobby and proceed up the Otis escalators to the main floor. For travelers with several bags, a special luggage truck for use of skycaps on escalators has been designed. After checking in at one of 20 counters operated by the major airlines, the passenger will walk to one of 15 buses parked on the loading ramp off the city streets. The terminal is designed to handle a peak load of 3,000 departing passengers per hour.

There will be 80,000 square feet of parking space on the roof of the terminal building for automobiles, accessible by means of ramps contained entirely within the building and completely separated from ramps used by the airline buses. Vertical passenger travel from the parking roof will be accommodated by one Otis elevator equipped for collective operation.



The architect's sketch of the proposed terminal building.

First OF ITS KIND IN THE AUTOMOTIVE FIELD!

. . . ASSURES GREATER EFFICIENCY -- GREATER ECONOMY

The Indian PATROL

SELF-STARTER

REVERSE GEAR

SHAFT DRIVE

FULL AUTOMOTIVE ELECTRICAL EQUIPMENT

HYDRAULIC BRAKES

in police departments fire departments and other municipal departments

Solves parking meter collection problems in congested areas . . . ideal for heavy traffic duty and emergency work . . . compact, maneuverable . . . rear seat accommodates 2 additional men . . . 6 cubic foot compartment beneath seat provides ample storage space . . . car operators become adept riders in minutes.

First in History

The only 3 wheel motorcycle offering ALL desirable automobile features PLUS these added advantages

- ★ LOWER INITIAL COST
- ★ LOWER OPERATING COST
- ★ SIMPLER MAINTENANCE

It's Sensational

For further information write Department AC

Manufactured by Indian Springfield, Mass.
P. O. Box 1448

We Know Actual Balances in Each Budgetary Account Daily

By JOSEPH F. BASE
City Manager
Ellensburg, Wash.

SOON AFTER MY ARRIVAL in Ellensburg in January 1952, it became evident to me that the accrual method of accounting had been overlooked. Purchase orders were not being charged to the appropriation account to which they applied at the time they were written. This was like operating a personal checking account without deducting outstanding checks. We had no way of knowing the net unencumbered balance in the various accounts.

In order to establish an accrual system of accounting, a procedure was developed at the commencement of the new fiscal year for centralizing all purchases in the City Manager's office. This required the establishment of a combined requisition and quotation form for the use of department heads and others concerned in initiating requests for purchases.

Prior to issuance of the purchase order to the vendor, the respective accounts in the various funds are now pre-encumbered so that the actual outstanding unencumbered balance will always be known. This prevents issuing purchase orders against accounts where no balances exist, and avoids the creation of deficits.

The accompanying requisition form was prepared for use in requesting all purchases. It was printed in duplicate sets and bound in pads; the *original* copy (pink) to be forwarded and the *duplicate* (orange) to be retained by the requesting department.

Each set is consecutively numbered in the space "Req. No." by each using agency. Other information includes the name of the fund to be charged and delivery instructions.

The body of the form is filled in with *quantity*, whether pounds, feet, gallons, etc., and description. Also indicated is the quoted price received from the vendor quoting the lowest "Net Total" cost to city.

The "Quotation Summary" is filled in with names of preferably three (at least two) vendors from whom quotations were received. Telephonic prices are satisfactory and expedite the procedure.

After completion of the requisition form, in duplicate, the responsible department head signs his name. The original (pink) copy is transmitted to the fiscal officer (City Clerk-Treasurer) for audit as to correctness of the fund to be charged, correctness of the account to be charged, and availability of sufficient unencumbered funds in each of the concerned budgetary accounts to permit purchase of the articles. If an insufficient unencumbered balance is shown in any account, the fiscal officer draws a red line through the item.

CITY OF ELLENSBURG WASHINGTON

REQUISITION

REQ. NO. _____
P.O. NO. _____

DEPARTMENT _____ DATE _____ 19__

FUND TO BE CHARGED _____

DELIVER TO _____

Quantity	Unit	Description	Unit Price	Amount	Account to be Charged
		TOTAL COST			

QUOTATION SUMMARY

Vendor	Quoted By	Total Cost	Trade or Cash Discount	Net Total

I hereby certify that the articles requested are necessary to properly conduct the activities of the Department. Department Head _____

Approved as to Fund and Amounts to be charged, also as to availability of funds
Fiscal Officer _____
Date _____ 19__

Approved for Purchase
City Manager _____
Date _____ 19__

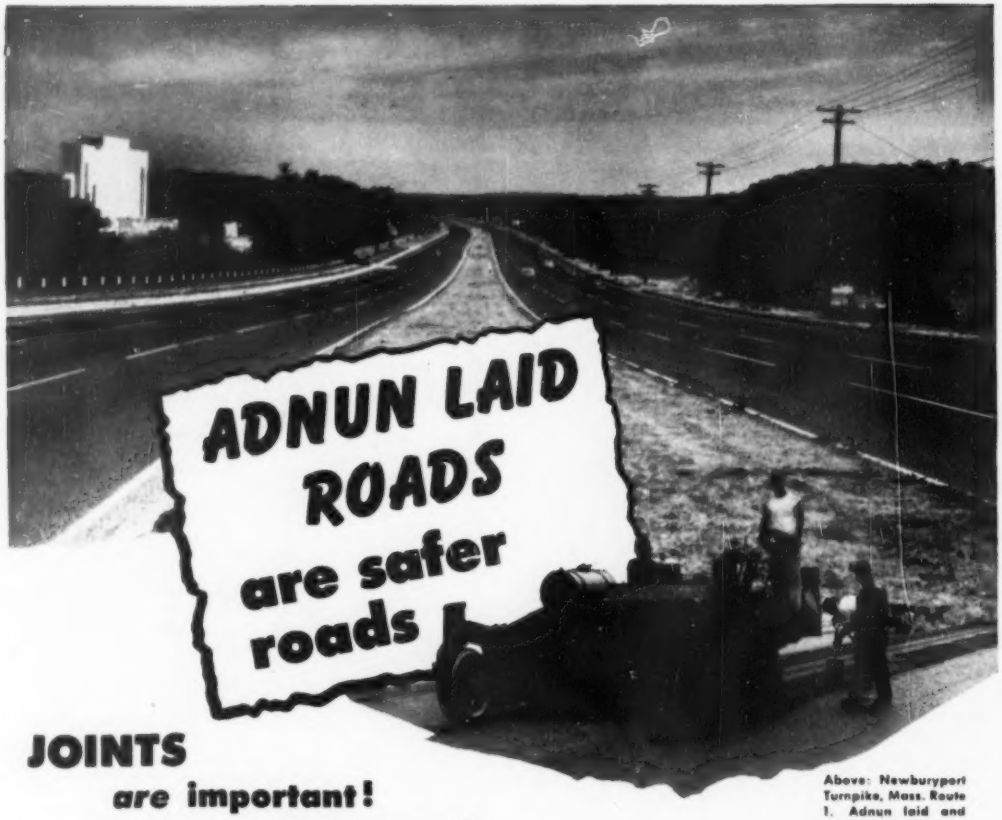
Purchase Order Procedure

The audited requisition is transmitted to the City Manager's office for examination and approval. After the purchase order is prepared, the requisitions will be filed in numerical sequence under the name of each requesting agency, for future reference.

Consecutively pre-numbered purchase orders are prepared in triplicate in the City Manager's office for all approved requisitions. The original goes to the vendor and the duplicate and triplicate go to the fiscal officers for encumbrance of funds and accounts.

Vendors send invoices to the City Manager's office, and these invoices must carry the correct requisition and purchase order numbers. As invoices are received, they are matched with the triplicate copy of the purchase order, which is stamped "*Articles Received*" and held for audit.

The foregoing procedure applies specifically to all purchases amounting to more than $5. Smaller purchases may be made without soliciting competitive quotations and may be placed directly with the vendor by the head of the requesting agency without clearance with the City Clerk-Treasurer or formal approval of the City Manager. However, requisitions must still be written in order that the steps under "Purchase Order Procedure" may be carried out and the respective funds and accounts encumbered accordingly.



Above: Newburyport Turnpike, Mass. Route 1. Adnun laid and traffic loaded since 1936, 15 years ago.

Lower: Joints are going to be tight and safe on this three lane job.

JOINTS *are* important!

IN this day of the increased use of asphalt on high-speed, multi-lane roads, tight, smooth joints mean safer roads.

The Adnun is the only black top paver that makes a tight joint automatically. The oscillating overlapping Cutter Bar carries the material up against the parallel course or curb and compacts it in place. It is not dependent on the eye or human judgment. It is level, tight and positive—a safe joint that will not throw a car off its course or leave thinner spots where breakdown can begin.

This is only one of the many Adnun advantages that has been responsible for the long life of heavily traveled Adnun laid roads. If you don't have them ask for the booklets "Roads That Last" or "11 Basic Things . . ." They tell an interesting story.

Above: Only overlapping Cutter Bar action can produce a joint like this. No raking or hand work is necessary.

THE FOOTE COMPANY, INC.

Subsidiary of Blaw-Knox Co.

1904 State Street **Nunda, New York**

ADNUN

TRADE MARK REGISTERED

BLACK TOP PAVER

Municipal
Public
Relations

The City Tells Its Story

Edited by HENRY DAVIS NADIG
Executive Director, Government Public Relations Association

Model ordinance for municipal public relations

AS A CLIMAX to the Fall course in Municipal Public Relations at the New School for Social Research, New York City, the students * worked on the development of a model MPR ordinance.

The objective, following several weeks of study of MPR problems and techniques, was to come up with an ordinance general enough to be adopted or adapted by cities desiring to take advantage of the economies and practicalities of MPR, and yet specific enough to provide some basic working material for the creation and implementation of MPR departments.

There was general agreement on the fact that MPR should be carried out on the basis of an ordinance. There was agreement that the MPR man should have definite responsibilities and should be answerable to the chief municipal executive and council.

After a study of several existing ordinances establishing public-relations departments or their equivalents, the students proceeded to work out, in class, an ordinance which might serve as a model.

The students believed it important to state clearly the need for an ordinance, to enumerate functions, and to specify that considerable initiative and operating executive powers should rest with the MPR director.

Of all the existing ordinances checked, it was agreed that the Dearborn, Mich., law was the most practical. It was held, however, that, unlike the practice in Dearborn where the department is called "Research and Information," municipal public relations should be fully recognized as such and that, wherever possible, the terms "Department of Public Relations" or "Public Relations Department" should be employed to designate the MPR operation.

The model ordinance is simple but concrete. It covers objectives, functions, and services. It places the MPR man in department-head position and it provides implementation by the legislative body.

As the basis for municipal thinking and action, the model ordinance should also provide a variety of ideas for consideration by mayors, city managers, and local-government legislators. Progressive municipal officials who may desire further information and specific examples of MPR activities should address inquiries to the editor of this department in care of THE AMERICAN CITY. Comments on the proposed model ordinance will be especially appreciated.

The model MPR ordinance follows:

Model Municipal Public Relations Ordinance

SECTION 1. *Purpose.* Because the problems of municipal government have become increasingly complex, it is essential that every feasible step be taken to achieve a better understanding between the citizens and the city government. A separate department or bureau within the city government is required, therefore:

1. To inform the public clearly on city-government functions and activities
2. To study citizen opinion for the city government
3. To promote greater citizen participation in the city government
4. To promote economy through systematic direction and operation of the many phases of the city government's public-relations activities
5. To assist in maintaining a high degree of *esprit de corps* among all city-government officers and employees

SECTION II. *Department of Public Relations Created.* There is hereby created a Department of Public Relations to be headed by a Director appointed by the municipal chief executive with the approval of the City Council. The Director shall be a person of executive ability and shall possess a working knowledge of the techniques of the mass-communication media. He shall be qualified to perform all the duties of his position. He shall staff, supervise, and control the Department and prescribe and enforce such rules and regulations for its operation as the full and proper function of the Department requires.

SECTION III. *Functions and Services.* This Department shall be responsible for the following functions and services:

(a) Conduct research, whenever requested, for the Mayor and City Council and heads of any other city-government departments

(b) Prepare and furnish special reports which may be requested by the municipal chief executive or City Council

(c) Make studies of objectives, functions, and results of the work of various departments of the city government and coordinate the public-relations phases of their work

(d) Maintain a useful information file of facts and figures regarding all city-government departments.

(e) Conduct surveys of public opinion as required and/or requested by the municipal chief executive and Council

(f) Prepare material for training municipal employees and conduct periodic training courses in municipal public relations for them

(g) Encourage interest of schools and students in municipal and civic affairs

(h) Prepare, publish, and distribute the city's annual report and any publications, pamphlets, leaflets, and departmental reports, as may be authorized

(i) Serve as a central information source on city-government affairs for both the public and municipal officials, and cooperate with any agencies seeking information on local affairs

(j) Prepare and disseminate information material suitable for the press, radio, and other mass-communication media and maintain liaison with them

(k) Cooperate with community civic groups, including clubs, business and fraternal organizations, and institutions, wherever and whenever facilities of the municipality properly may be utilized.

(l) Cooperate with all official and

* This group of mature students, several of whom are engaged in municipal or public-relations activities, included: Allan Bass, Oakley Beaman, Carmine Buccieri, Raul Calderon, Frank Ceraso, Lawrence Goldberg, Philip Ripps, Milton Shapiro, and Robert Steele.

How much does progress cost?

Communities today cannot sleep. They can't even catnap! A modern community must remain constantly alert to keep pace with the needs of its people. It must move with the rhythm of swiftly changing times and technologies.

But the question comes up: how can a state or city *pay* for its progress? How can it *afford* new roads, new recreational facilities, an up-to-date water supply?

Many progressive states, communities and authorities have found the answer in a sound financial program drawn up and carried out by Drexel & Co.

Drexel & Co. advise on the development of programs for revenue or direct obligation financing, and undertake the marketing of bond issues. They supervise all details of issuance, working in conjunction with legal counsel, and where necessary, with engineers or architects.

We will be glad to send you on request a booklet describing Drexel & Co.'s investment banking facilities—including state, municipal and revenue financing service.

DREXEL & CO.
Investment Bankers
1500 WALNUT ST. • PHILADELPHIA 1
14 WALL ST • NEW YORK 5

civic efforts designed to promote sound business, industrial, and residential development of the city

(m) Serve the municipal chief executive and City Council in the preparation of plans for any special events, including the reception of official guests

(n) Perform such other public-relations services, in the interest of the general welfare of the community, which may achieve the objectives of this ordinance

(o) Perform any other service, in keeping with the purpose of this ordinance, which may be requested by the chief executive or authorized by the City Council

SECTION IV. *Appropriation.* The City Council shall appropriate annually the necessary funds to provide for efficient operation of the Department of Public Relations, including suitable quarters, facilities, equipment, and personnel. The salary of the Director shall be fixed by the Council.

73 Miles of New Streets

Daytona Beach, Fla., completes extensive asphalt-paving program, in which both portland-cement concrete and limerock bases are used

ONE SCARCELY CAN IMPROVE 73 miles of streets in a city no larger than Daytona Beach, Fla., without improving them all. This city's program involved a cost of $2,500,000, and included both portland-cement concrete base and stabilized-base both covered by a high-type asphalt surfacing.

The concrete bases were built on two heavily traveled arteries. Both streets were widened, one to 80 feet and the other to 100 feet. Since the paving was being placed during the winter tourist season, the contractor was ordered to pave one-half of the street at a time, leaving the other half open to traffic. A 6-inch, unreinforced-concrete base course was laid on the grade and a 1½-inch asphaltic binder covered by a 1-inch surface course carries the traffic.

The 100-foot street, that is, the street with 100-foot right of way, now has four traffic lanes, totaling 46 feet in width, flanked on each side by 16-foot paved parking areas, making the entire paving width 78 feet. The edges of the streets have a 2-foot concrete curb-and-gutter section.

The rest of the streets got a base constructed of native marl or soft limerock, which can be rolled and has the quality of knitting into a strong, serviceable supporting base. The bearing values developed were high, as measured by the tests developed by the Florida Highway Department.

The asphalt surfacing was designed to the following analysis:

BINDER COURSE

Material	*Screen Size*	*Per Cent Passing*
Sand	#200 to #8	5% to 7%
Stone	#4 to 1-in.	20% to 35%

The asphalt content was between 5% and 7%.

WEARING SURFACE

Screen Size		
Passing	*Retained*	*Percentage*
#200	.....	10 to 15
#80	#200	12 to 28
#40	#80	20 to 45
#10	#40	15 to 32
#8	#10	0 to 3

The asphalt content was between 9% and 12%.

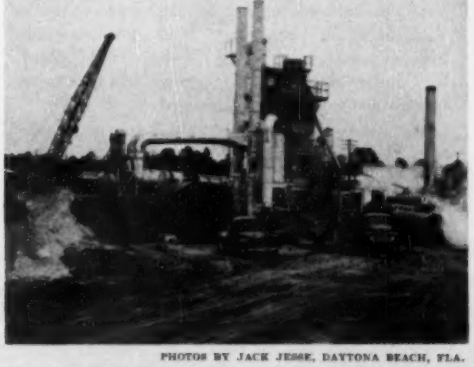
For all paving, the city used Trinidad asphalt with a penetration of between 60 and 80. Both mixes were heated to temperatures between 300° F. and 350° F. The contractor used both Barber-Greene and Jaeger pavers to lay the asphalt.

All streets were paved with curb radii at intersections of 25 to 55 feet to facilitate auto turning. Previously, the sidewalks met the street paving at a great many locations, and the pedestrian was in danger of being hit by an automobile.

Because local sands were too fine to give satisfaction in the sheet asphalt, sand and fine broken-stone screenings were imported from western Florida. Other aggregates were obtained locally. The surface-binder courses varied from ⅝ to 2½ inches in thickness with a uniform depth of 1 inch of sheet asphalt. Stability, as determined by the Hubbard Field test, ranges between 1,800 to 1,900 pounds.

The paving was placed by S. B. Brinson, J. Cone, and J. D. Manly, a group of contractors who combined to build the project. The engineering was under the direction of Gannett Fleming Corddry and Carpenter, Inc., of Harrisburg, Pa., who also supervised the construction. The project was supervised by J. D. Carpenter, vice-president of the engineering firm, and John Dietz, head of the firm's highway unit. Charles Zwally was resident engineer, and Walter Peightal was chief inspector.

Workmen in Daytona Beach, Fla., are busy hand-raking a binder course laid at approaches to an intersection.

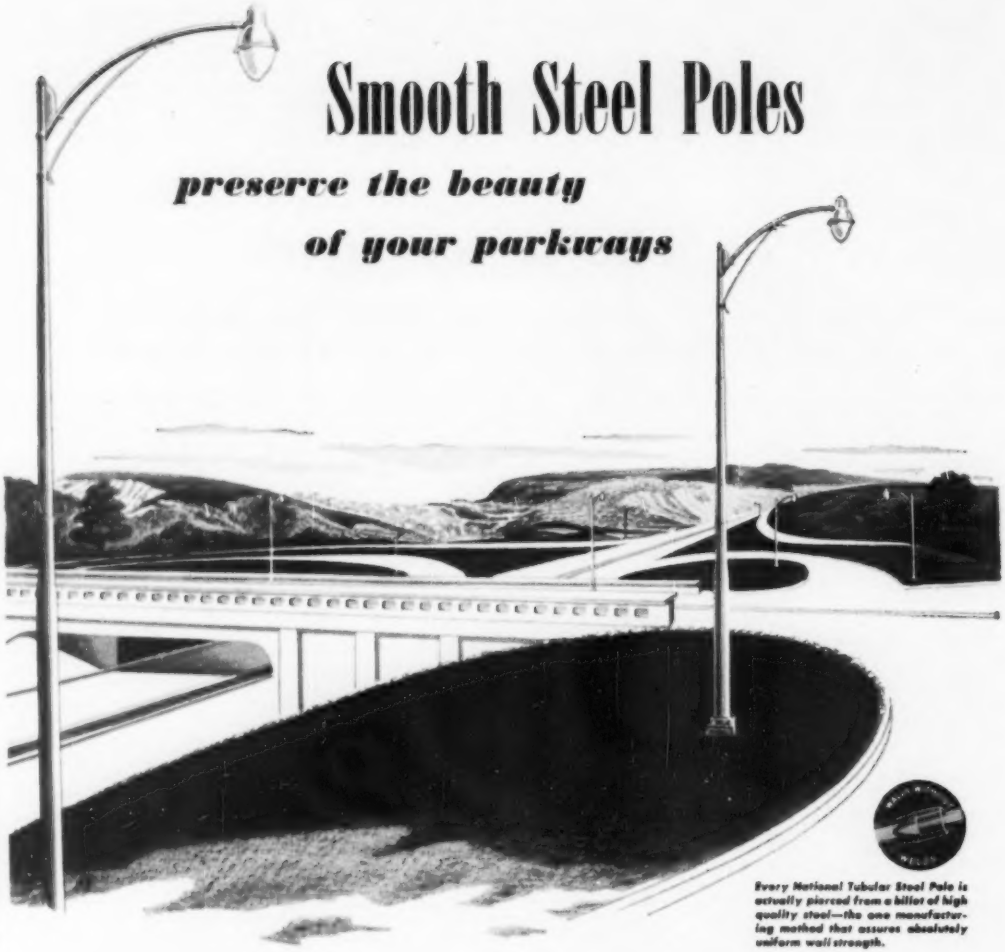


PHOTOS BY JACK JESSE, DAYTONA BEACH, FLA.

This is one of the two plants used to mix the asphalt.

Smooth Steel Poles

preserve the beauty of your parkways



Every National Tubular Steel Pole is actually pierced from a billet of high quality steel—the one manufacturing method that assures absolutely uniform wall strength.

● These gracefully tapered steel poles are the most unobtrusive standards available, because steel is so strong that a much smaller diameter pole can do the work of larger poles made from other materials. Slender poles melt into the landscape and, because they do not obstruct vision, they are less of a safety hazard than thick wooden standards.

The amazing strength of these National Tubular Steel Poles makes them especially valuable when they are used for trolley or telephone line service: you don't have to use so many poles because they can be spaced farther apart.

Maintenance? Except for an occasional paint job, they don't need any.

When you lay plans for future civic construction, remember National Tubular Steel Poles. Dollar for dollar they can't be beat—for appearance, for durability or for strength.

USS

NATIONAL TUBE DIVISION

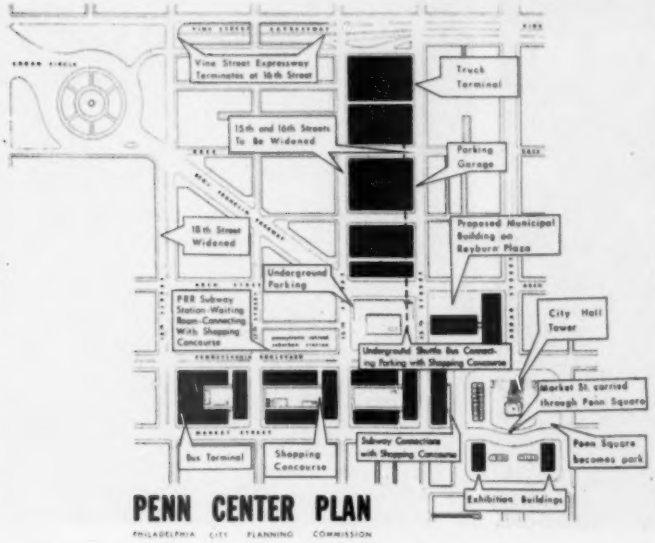
UNITED STATES STEEL COMPANY, PITTSBURGH, PA.

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S NATIONAL *Tubular* STEEL POLES

UNITED STATES STEEL

New Penn Center Redevelopment Plan Presented at Philadelphia


Vine Street Expressway Terminates at 16th Street
Truck Terminal
15th and 16th Streets To Be Widened
Parking Garage
18th Street Widened
Proposed Municipal Building on Reyburn Plaza
Underground Parking
PRR Subway Station-Waiting Room-Connecting With Shopping Concourse
City Hall Tower
Underground Shuttle Bus Connecting Parking with Shopping Concourse
Market St. carried through Penn Square
Subway Connections with Shopping Concourse
Penn Square becomes park
Bus Terminal
Shopping Concourse
Exhibition Buildings
PENN CENTER PLAN
PHILADELPHIA CITY PLANNING COMMISSION

THE "PENN CENTER PLAN" for Philadelphia was unfolded as a coordinated proposal by the Philadelphia City Planning Commission, based on years of careful technical study, at a luncheon meeting on February 21, sponsored by the Citizens' Council on City Planning in cooperation with the Greater Philadelphia Movement and the Chamber of Commerce of Greater Philadelphia and its Greater Philadelphia-South Jersey Council.

View of the proposed Penn Center, looking west, showing Market Street passing through Penn Square and the proposed commercial development where the "Chinese Wall" now stands.

A portion of the detailed new model which was displayed and the proposed developments in the area are shown in the accompanying illustrations.

Edmund N. Bacon, Executive Director of the Commission, in his statement on the Penn Center Plan, pointed out that there exists now a coincidence of facts that give to Philadelphia today an opportunity that no city in this country has ever enjoyed before.

He said that the removal of Broad Street Station and the elevated tracks creating the "Chinese Wall" is exposing for fresh development a broad tract of land in the heart of the city.

Among the other major factors cited by Mr. Bacon:

A great new system of express highways is just now nearing completion or final design on the engineers' drawing boards that will bring ready access to the center of the city from all parts of the region.

Great new powers have just recently been granted the City through its Redevelopment Authority and Parking Authority, which make possible the accomplishment of rational, coordinated developments which would have been unheard of only a short time ago.

A great new municipal awakening has taken place, a new concern for the future of Philadelphia on the part of its citizens, as expressed, for example, in the overwhelming adoption of a new charter for the city.

In addition to this the City Planning Commission, well supported by the municipal government over the past nine years, has been carefully studying the multiple facets of traffic movement, railroads, and transit so that they may be tied together to produce a more efficient city center.

Miami Beach Launches Two-Way Public Relations Approach

MIAMI BEACH blossomed forth with Volume I, No. 1 of two new attractive publications in January, both produced by the city's Office of Public Relations, of which Hank Meyer is director. Both newsletters are of the same size, printed on glossy paper, and illustrated with cartoons and photos in their four pages. One, *City Desk*, is directed to city employees of Miami Beach. The other, *Miami Beach Record*, is a quarterly "Report to the People" on the city's improvement program and other municipal affairs of general interest.

CITY DESK

Mayor Powell To Make Service Awards

Miami Beach Record

A Report to the People

PUBLISHED BY THE CITY OF MIAMI BEACH

VOTERS TO DECIDE FRANCHISE ISSUE TUESDAY

BANKING COMMITTEE APPROVES CITY PROJECTS

SPECIAL ELECTION CALLED BY COUNCIL

SUMMER OR WINTER, G-E Floodlighting can increase the use of outdoor recreational facilities in your community. Scenes are enlargements from the 16mm film "A Chance to Play," available from the General Electric Company.

Make your play areas more useful with G-E Floodlighting

The only time a large percentage of our adult population can relax is in the evening.

Moreover, youngsters above a certain age continually seek "something to do" after dark.

You can do a great deal toward building better community spirit . . . encouraging healthful family activities . . . preventing juvenile crime . . . lowering street accident rates . . . simply by providing floodlighting to make your existing recreational facilities ***usable after dark.***

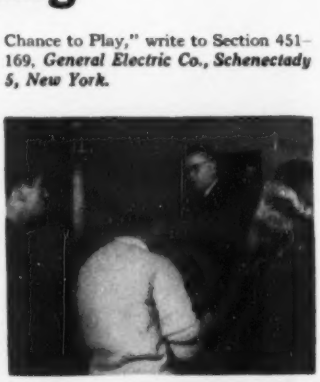
Here are some of the helps General Electric offers you to assist in planning floodlighting to serve your community needs:

MOVIE: "A CHANCE TO PLAY," prepared by the March of Time for General Electric. This dramatic 16mm documentary film will help sell your community on the need for adequate recreational facilities.

SPORTS FLOODLIGHTING for all types of sports is covered in G.E.'s "Manual of Floodlighting Plans." Gives complete specifications down to wiring details! The hardest part of ***any*** lighting job, the engineering, is done for you in this manual.

SPECIALIZED SERVICE is provided by highly trained General Electric lighting specialists to help you with unusual floodlighting problems, which cannot be handled by your local contractor or from standard plans included in G.E.'s "Manual of Floodlighting Plans." He's available through your local G.E. sales office.

FOR INFORMATION on the "Manual of Floodlighting Plans" or the film "A Chance to Play," write to Section 451–169, ***General Electric Co., Schenectady 5, New York.***



HELP PREVENT DELINQUENCY. A few floodlights to make neighborhood play areas usable after dark will go a long way. Scene is from film "A Chance to Play."

GENERAL ELECTRIC

451-169

The protection of vital public records is your responsibility today

Here's how you can get valuable extra protection with low-cost Recordak microfilming—

First of all, Recordak microfilming enables you to put your large, unwieldy record accumulations on compact rolls of film. 5,600 legal-size documents, for example, on a roll that's no larger than your palm. And each tiny film image—photographically accurate and complete . . . sharp and clear in every detail when you view it in a Recordak Film Reader.

This tremendous "de-bulking" makes it possible for you to vault-store *all* your vital records—not just a "file-full." Makes it possible, too, for you to send complete sets of duplicate film records to any destination—quickly, conveniently. Also, it enables you to reclaim valuable floor space—to move bulky original records (if they must be retained) to low-cost storage areas.

The cost of "playing it safe" with Recordak microfilming is surprisingly low—as hundreds of City, County, State, and Federal agencies know.

Documents can be recorded instantaneously—for a *fraction of a cent apiece.* And a Recordak Microfilmer—just right for your requirements—can be obtained on an *attractive purchase or rental basis.*

Write today for complete details. Recordak Corporation
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originator of modern microfilming—and its application to government routines

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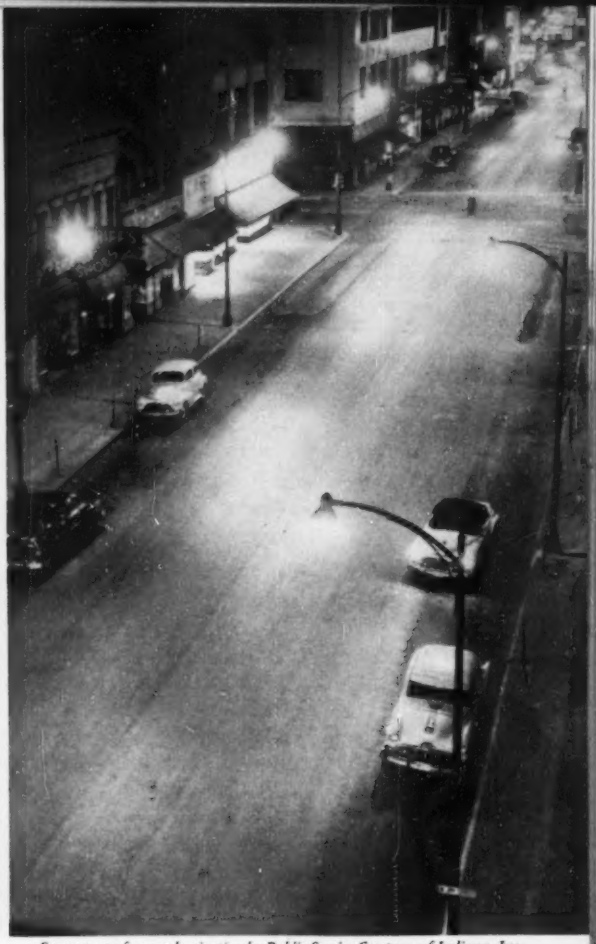
Lafayette, Indiana, street lighting before *modernization.*



Same street after *modernization by Public Service Company of Indiana, Inc.*

What a difference modernization makes!

THESE unretouched photos from Lafayette, Indiana, show the striking difference between the old and the new. And the remarkable part is that this wonderful improvement was accomplished using the same size lamps in the same locations.

Here's real evidence of how modernization pays off in bright, uniform, *safe* lighting. Monotube poles with 6′ bracket arms mounting modern pendant luminaires at 28′ light source, replaced the old style 15′ upright standards. The poles were installed in the same locations. Both systems used 10,000 lumen lamps.

Monotubes are ideal for all street lighting requirements and are available in a broad range of standard designs and sizes. They offer such important advantages as cold-rolled strength and attractive, tapered, one-piece construction. For complete information write to The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Monotube Street Lighting Poles

Relighting Cincinnati's Streets With Government Square an Example

By **ROBERT STOCK**
Electrical Engineer
Cincinnati, Ohio

CINCINNATI, among people who know the city best, is said to possess a quality that you will hear called "Old World atmosphere." A definitely modern building, for example, set in between the long frontages built in the decades just after the Civil War looks far more startling than the same architecture would in the vistas of a younger city.

To a municipal engineer, this atmosphere, this charm, spells gas- and arc-lighted streets with their traffic hazards, higher cost of maintenance, and — in the downtown area — cluttered curb lines. Here in Cincinnati, at present, every related branch of the city management—and, for that matter, every responsible citizen—must in part be concerned with the traffic-safety record. We must each help to cut down the appalling toll of traffic deaths, and we must do this during a period of inflation and necessarily cost-conscious city management. Somehow, moreover, we must carry out all our plans with some regard, however secondary, for the appearance of things like curb lines and even for "Old World atmosphere," since such is the character of our city.

In this character, Cincinnati, with a thousand miles of streets, has been lighted by upright gas lights and some pendant arcs. Both of these older systems were hopelessly outmoded in terms of modern traffic conditions and up-to-date budget standards for maintenance. Our program of relighting must take care of moderate corporate growth as well as replacement of inadequate existing lighting. The aim must be overall improvement of the street lighting throughout the city consistent with general civic demand for traffic safety and the ever-present limitations of the municipal budget.

6,584 Units Replaced Thus Far

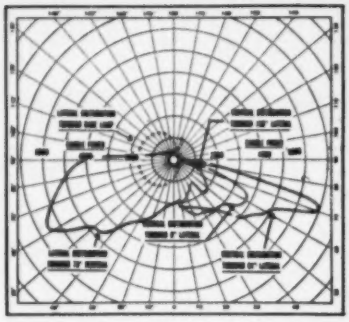
Since World War II, we have removed 1,284 upright gas lights of 60 candle-power, spaced at about 120-foot intervals. These had cost the city $27 per year each, with amortization complete. They have been replaced by 1,922 incandescent lights of 250 candle-power, spaced at approximately 240-foot intervals. These cost the city $33 per year each including amortization. We have also removed 5,300 inefficient arc lights of 600 candle-power, spaced about 400 feet apart. These cost the city $34.80 per year each, with amortization complete. They have been supplanted by 6,250 incandescent lights also of 600 candle-power at 300-foot intervals. They cost the city $45 per year each, with amortization included.

Example of An Ideal Installation

In this program of steady, rather than spectacular, progress one specific relighting job merits special mention. It evidences the joint achievement of all the aims of our program and is exemplary, not because it is typical or average, but, frankly, because it is ideal in its accomplishment of enhanced safety by better illumination, of practical recognition of costs, and of improved curb-line appearance through joint use of poles.

Government Square is the heart of Cincinnati—a little less than an acre of asphalt pavement that throbs with pedestrian and vehicular traffic which must not be obstructed except along its 400-foot north and south boundaries. Along the entire north side of it stands the Federal Building which houses much of the United States Government activity in Cincinnati. To the south it is flanked by a series of retail frontages. The center strip is the downtown terminus of over 90% of the city's motor-bus routes. Outdoor displays—military, civil, and industrial—frequently occupy space along the north edge. The square was formerly lighted with twelve 600-candle-power upright boulevard lamps on 13-foot standards—12 more pickets in a veritable fence of trolley-wire poles, fireplugs, mailboxes, and parking meters. Even though amortization was complete, these outmoded lights were

Cincinnati's Government Square under illumination by twelve 1,500-watt, 3,250-candle-power luminaires, overhanging the street 10 feet at a height of 30 feet on Elreco upsweep bracket arms.



The L-M *Ovalite* takes either incandescent or horizontal-burning mercury vapor lamps. Mercury lamp is high up in the reflector. This, combined with the design of the HOLOPHANE® refractor, results in low surface brightness and less glare, and a broad light-distribution pattern as shown by the curves in the chart.

New design of L-M Ovalite gives improved light distribution for mercury vapor

The new *Ovalite* is designed for high intensity lighting over a wide area. The rectangular Alzak reflector provides asymmetric light distribution. An Alzak deflector passes the light down around, not through, the lamp. Prisms on the house side of the Holophane refractor re-direct the light toward the street. Optional magnetic arc-control feature holds the arc in the optical center.

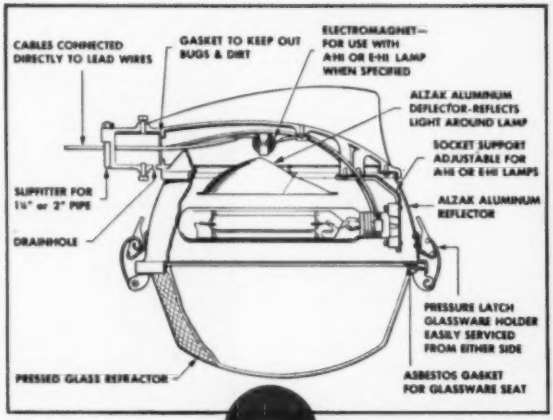
Lower mounting height—Unlike mercury vapor units with narrower distribution, the *Ovalite* provides wide IES type IV distribution. This means that the *Ovalite* is effective at lower mounting heights of 25 to 30 feet, which saves pole costs and maintenance. The use of elevating prisms in the refractor results in low surface brightness and minimum glare.

Unusual easy-service feature—Pressure latches on both sides hold the glassware snugly. Either latch acts as a hinge when the other is opened, permitting service from either side. An exclusive L-M feature.

Pendent or side-mounted, for either mercury or incandescent—The *Ovalite* takes mercury vapor E-H1, 20,000 lumens; A-H1, 15,000 lumens; or A-H5, 11,000 lumens; or incandescent lamps up to 15,000 lumens series. Slipfitter and pendent mountings in 1¼" or 2" sizes.

GET THIS FREE OVALITE BULLETIN

The *Ovalite* bulletin provides details on design, use, types, ballasts. Ask your L-M Field Engineer for a copy or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).


CABLES CONNECTED DIRECTLY TO LEAD WIRES
GASKET TO KEEP OUT BUGS & DIRT
ELECTROMAGNET—FOR USE WITH A-HI OR E-HI LAMP WHEN SPECIFIED
ALZAK ALUMINUM DEFLECTOR-REFLECTS LIGHT AROUND LAMP
SOCKET SUPPORT ADJUSTABLE FOR A-HI OR E-HI LAMPS
SLIPFITTER FOR 1¼" or 2" PIPE
ALZAK ALUMINUM REFLECTOR
DRAINHOLE
PRESSURE LATCH GLASSWARE HOLDER EASILY SERVICED FROM EITHER SIDE
PRESSED GLASS REFRACTOR
ASBESTOS GASKET FOR GLASSWARE SEAT

Note the rectangular reflector, the deflector, and the mounting of lamp well up in the reflector.

LINE MATERIAL

Street Lighting

Ovalite is an L-M trademark

costing the city $39 a year each and dissipating light in every direction at an average of 0.4 footcandle.

A local manufacturer—The Elreco Corporation of Cincinnati—was able to adapt 12 trolley span-wire poles as standards even though some of them were 50 years old and all 12 varied considerably in diameter and height. Elreco's adapters and arms brought the General Electric Form 108 luminaires to a uniform 30 feet above the pavement. Elreco's tie-rodded upsweep arms put the big 50-pound lights 10 feet out over the street. Now it is possible to read fine newsprint while waiting for a bus, for 2.56 footcandles of illumination and a brightness ratio of 1.6 to 1.0 is provided. This is far in excess of the I. E. S. recommendation of 4 to 1.

All Cleveland Heights Is American Standards Lighted

By HENRY M. KIMPEL
City Manager
Cleveland Heights, Ohio

AFTER TRYING TO PIECE OUT our existing street-lighting system with new units here and there, with unattractive and ineffective results, we asked The Cleveland Electric Illuminating Company to make recommendations for lighting the entire city of 58,782 people and 121.5 miles of improved streets. The result was a three-year plan that was completed in 1951. All streets have been lighted by modern luminaires to levels recommended by the American Standards Practice Code. Besides making the streets safer for pedestrians and vehicles, reflected by fewer crimes and crashes, the better lighting has aided police and snow-removal forces. It was done in this order:

The First Year

Ten main traffic thoroughfares were relighted in 1948, five of which were the main east-west arteries and five were north-south thoroughfares. They accounted for the greatest proportion of traffic accidents in the city.

These ten streets, 17.3 miles in total length, were the widest and longest streets in the city, and it was recommended that they be lighted to an intensity ranging from over 1.1 average horizontal footcandles in some sections to no less than 0.6 average foot-candles where the traffic volume was smallest. The latest type of luminaire was installed, with one hundred and seven 6,000-lumen lamps, six hundred and forty-one 10,000-lumen lamps, and twenty-five 15,000-lumen lamps mounted 25 feet above the pavement. These units replaced old-style luminaires of which approximately two-thirds had 4,000-lumen lamps and the rest 10,000-lumen units—from which you will see we already had pretty good street lighting.

The increased annual cost to relight these ten main thoroughfares was approximately $20,000, or $1,205 per mile. The average lamp size was increased from 1,724 lumens to 9,608 lumens.

The Second Year

For the second year's program, 21 residential traffic arteries and 25 other residential streets were lighted. The residential arteries bore the major portion of the local traffic. Local residents used them as by-pass routes for the principal commercial thoroughfares. The other streets were selected because they were bus routes where women would be waiting for public transportation or walking from the bus stops at night.

The 26 "other" residential streets were selected on the basis of special complaints or reports in the police records indicating the need for more adequate lighting as evidenced by accidents, house-breaking, or reports of women being molested.

The program involved 1,243 new luminaires to replace 396 old-style units. On the residential thoroughfares, two hundred and fifty-six 4,000-lumen lamps, seven hundred and ten 6,000-lumen lamps, and sixty-two 10,000-lumen lamps were installed to replace two hundred and sixty-two 4,000-lumen lamps and seventy 10,000-lumen lamps existing. The other residential streets required installation of two hundred and fifteen 4,000-lumen lamps to replace sixty-four 4,000-lumen lamps without any increase in the average lumen size.

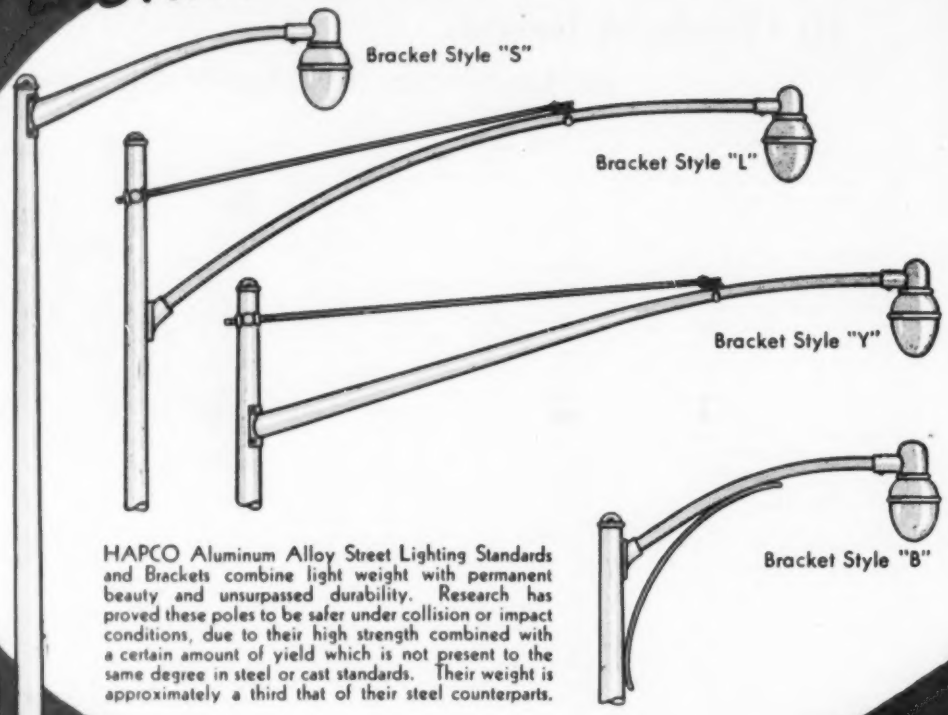
Left to right are the author, Police Chief Edward W. Griebel, and E. E. Raymond, a representative of The Cleveland Electric Illuminating Co.

Though the lamp sizes were the same, the larger number of units brought these low-intensity streets up to American Standard Practice. Incidentally, it was found that for residential streets lamps of 4,000 or 6,000 lumens are preferable to the

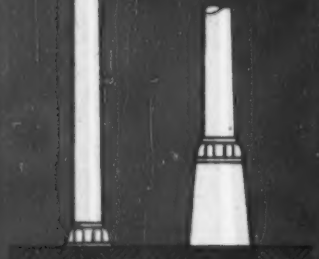
New Westinghouse luminaires on Monticello Boulevard in Cleveland Heights.

HAPCO Aluminum Alloy Street Lighting Standards

for LASTING BEAUTY



HAPCO Aluminum Alloy Street Lighting Standards and Brackets combine light weight with permanent beauty and unsurpassed durability. Research has proved these poles to be safer under collision or impact conditions, due to their high strength combined with a certain amount of yield which is not present to the same degree in steel or cast standards. Their weight is approximately a third that of their steel counterparts.



- Pole heights from 20 to 35-feet.
- Pole diameters, 8-inches or under, tapering to 4-inches.
- All poles are seamless and jointless.
- Tapering is produced from a single tube by a special process.
- Hand holes furnished extra on request on Type No. 1 Poles.
- Brackets are seamless, jointless and may be either tapered or uniform in diameter.
- Bracket lengths from 3-feet.
- Special bracket styles to your specifications.

POLE TYPE No. 1 Tapered Base — POLE TYPE No. 1-T Transformer Base

[*Write for detailed information on your individual problems, and a copy of the bulletin, "Hapco Aluminum Alloy Street Lighting Standards."*]

HUBBARD ALUMINUM PRODUCTS COMPANY

MANUFACTURER OF HAPCO QUALITY ALUMINUM PRODUCTS

A Division of HUBBARD and COMPANY

6301 Butler Street • Pittsburgh 1, Pa.

larger sizes. They give a more agreeable light with adequate safety.

The third-year program called for relighting the rest of the residential streets, 210 in number, and 75.7 miles in length.

Most of these streets were only two or three blocks long and were set off into natural areas bounded by streets already relighted. There were 21 such areas comprising from 5 to 17 streets.

To relight these 21 areas, 1,875 new 4,000-lumen lamps are being installed to replace 747 existing 4,000-lumen lamps in old-style units. This was an increase of 1,128 lamps over 75.7 miles of street, or an increase of 15 lamps per mile.

The lamp sizes are not changed, but a great improvement was made in this residential lighting by the use of new types of luminaires and shorter spacing between lamps. Tests made on actual streets proved beyond a doubt that smaller-sized lamps, closer together, could do a superior job of lighting to that of larger lamps farther apart. The new spacing of lamps averages about 200 feet.

The increased annual cost to the community for modernizing lighting on strictly residential streets works out to be about $575 per mile, or an over-all cost per mile of under $1,000.

Modern Street Lighting Extolled in Popular Magazine

PERFECT SET-UP. Old-fashioned street light protects nobody. Ten yards away there may be a murder.

It's smart to be afraid of the dark — that's when 75 per cent of all crimes in the U.S. are committed. Here's what one city has done to slash its crime rate — others can do it, too

by Beatrice Schapper

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MODERN street lighting's extraordinary values to the public are told the public by *This Week Magazine* for February 3, 1952, in a story by Beatrice Schapper, the first page of which is reproduced here. Cleveland, Ohio, is taken as a case where these values were publicly demanded (by the Federation of Women's Clubs) and a city-wide program was instituted.

By October 1951, 400 of Cleveland's 1,300 miles of streets had been lighted or relighted. The story was told by W. T. Sojeba, Chief of the Lighting Bureau, in the October 1951 issue of THE AMERICAN CITY and featured on the cover. Mayor Thomas A. Burke stated, in the same issue, that "Cleveland's street-lighting program was undertaken as the result of high night-accident rates and crimes against the people — purse-snatchings, muggings, and assaults on women and children."

The story in *This Week* said that when a delegation from the Federation of Women's Clubs demanded a curfew, more police, and modern street lighting, Mayor Burke "recalled to the ladies how officials had tried for years to get the public to authorize funds for improved lighting."

To Light Jack London Square in Oakland, Calif.

TWENTY modern lighting standards and luminaires will be installed in Jack London Square at the foot of Broadway, it is announced by Vice-President James F. Galliano of the Oakland Board of Port Commissioners.

The lights will illuminate both the parking areas and the streets on Jack London Square. The city electrical department will cooperate with the Port of Oakland in the installation of conduits for the lighting, which will be installed and operated by the city on the same basis as would apply in other business areas, where the property owner participates in the cost.

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NIGHT DRIVING IS SAFER ON THE NEW JERSEY TURNPIKE!

. . . ALL Traffic Lines Marked Brilliantly with the PRISMO LIFE LINE . . . America's Finest Reflective Traffic Paint

Enlarged sectional side view showing Prismo spheres embedded in the Prismo Life-Line Plastic Binder.

Night photo of the New Jersey Turnpike clearly showing the Prismo Life Line, marking all traffic lines brilliantly.

Through the exclusive use of Prismo, the finest reflective traffic paint in all the world . . . New Jersey marks the way for greater safety on its newest highway . . . the New Jersey Turnpike. The complete Prismo service, supervisory personnel, marking equipment and traffic paint, makes the newest turnpike . . . the safest turnpike, night and day. You can help reduce traffic accidents by marking your highways and streets with Prismo reflective traffic paints. Save time . . . Save money . . . by turning your traffic marking problems over to Prismo.

The SPHERE of SAFETY

"Nothing Equals Prismo But Prismo"

. . . Write for informative bulletins on Prismo reflective traffic paint.

PRISMO SAFETY CORPORATION

HUNTINGDON, PENNA.

Three Devices That Help Make New Jersey Turnpike's 60 mph Feasible

The cones are made visible at night by a coat of fluorescent paint; serve as barriers on the New Jersey Turnpike.

Prismo traffic lines, Trafficones, and punched-card toll tickets

A "life-line," made reflective by tiny glass spheres, marks the traffic lanes.

CARRYING BOTH passenger and commercial traffic, and costing $255,000,000 without landscaping or highway lighting, the increasingly famous New Jersey Turnpike is designed for speed and safety day and night. The 118-mile highway (completed and opened full length January 15, 1952) links the George Washinton Bridge, the Lincoln Tunnel, and the New York and Connecticut parkway systems with the Delaware Memorial Bridge and the Maryland Expressway, with connections planned to the Pennsylvania Turnpike and the New York Thruway. Spectacular traffic volume is predicted with a legal speed of 60 miles per hour.

Without benefit of traffic signals or highway lighting, particular attention had to be directed to other methods of guidance. There are two of these. One is the painted traffic lines; the other was the use of barriers as when approaching a toll station or interchange.

Prismo Stripes Make Night Driving Safer

Night driving is made safer on the turnpike by all traffic lines being brilliantly marked with the Prismo Life-Line, a reflective traffic paint in which millions of tiny, round, glass spheres are embedded in a special semiplastic binder.

The Prismo striping operation is being carried out by two marking crews, using the Wald Reflecto-Liner striping machine and the Wald Carry-Liner. The center stripes, 25-foot lengths with a 25-foot gap between each length, are being applied automatically by these machines and the binder and spheres are applied simultaneously.

The Prismo Life-Line stripe is expected to outlast plain traffic paints by 3 to 5 times. When the New Jersey Turnpike and the extension from the Pennsylvania Turnpike to meet it have been completed, the pike will be a Prismo-marked road from the George Washington Bridge to the Ohio line.

Fluorescent Trafficones

The problem of barriers was solved by the use of Trafficones. Made of flexible-rubber construction, these steel-like 30-inch cones have an authoritative appearance that has made them an accepted device for guidance and protection from coast to coast. Their warning quality is especially effective at night due to a coat of fluorescent paint.

The interchanges along the route coming north are those for the Delaware Memorial Bridge, Swedesboro-Chester, Woodbury-South Camden, Camden-Philadelphia, Burlington-Mount Holly, Bordentown-Trenton, Hightstown-Trenton, New Brunswick, Garden State Parkway, Woodbridge-the Amboys, Carteret, Elizabeth, Newark Airport, Newark-Jersey City, Lincoln Tunnel, Secaucus, and the George Washington Brdige.

Tickets Pre-Punched, Tolls Audited, and Statistics Accumulated by Punched Cards

Combined punched-card accounting machines and axle-counting system developed by Remington Rand assure that users of the turnpike pay correct tolls.

A pay-as-you-leave ticket system uses tabulating cards pre-punched to indicate the point of entry to the highway and the type of vehicle. The driver picks up his ticket as he enters the turnpike, pre-printed with correct tolls for every point of exit. Thus, he may continue without slowing down for tolls. When ready to leave the highway, he makes a right turn, drives through a toll lane at the exit interchange (the term used for entrance and exits) and there turns in his ticket to the toll collector, and pays the fare printed on the card for this particular interchange.

As the vehicle approaches the toll gate, a "pedestrian-proof" treadle

IN TRAFFIC CONTROL

Adlake's

"mighty midget" does a giant's job!

Actually small enough to fit into the palm of your hand . . . yet the ADLAKE "Mighty Midget" makes or breaks 30 amps. easily, with low operating current! What's more, its sturdy construction assures absolute dependability under all operating conditions!

ADLAKE Relays are hermetically sealed, preventing atmospheric changes from interfering with operation. Their mercury-to-mercury contact prevents burning, pitting and sticking, and they are cushioned against impact and vibration.

Modernization of old traffic control equipment is easy and economical with ADLAKE Relays, and ADLAKE engineers are always ready to work with you on your particular problems. Just drop a card to The Adams & Westlake Company, 1125 N. Michigan, Elkhart, Indiana. No obligation, of course.

EVERY ADLAKE RELAY GIVES YOU THESE "PLUS" FEATURES:

- ***Hermetically sealed*** **(dust, dirt, moisture, oxidation and temperature changes can't interfere with operation)**
- ***Silent and chatterless***
- ***Requires no maintenance***
- ***Absolutely safe***

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THE ADAMS & WESTLAKE CO.

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registers the number of vehicles and axles as a check against the type of vehicle registered on the ticket at the point of entry. These treadles not only indicate the number of axles rolling over them, but whether forward or reverse. This is recorded in remote electrical recorders, one for each toll lane, and all are housed in the register room of the interchange utility building—a room accessible only to Central Office tellers and maintenance men.

Stamped on each of the tickets by a validating machine is the exit interchange number, the time and date of collection, and the number of the collector. When the collector goes off duty, he puts his collected fares in a money bag together with a deposit slip and the corresponding tickets with a duplicate deposit slip in another bag, depositing these in a vault in the utility building. Each morning a Central Office teller picks up the money, the tickets, and the tapes from the remote electrical recorders and takes these to the Central Office where all three are mechanically audited for any possible variance.

This system of double checking also provides a complete cross-file for accounting control and statistical information. Remington-Rand tabulators make these daily audits of all information on the cards which are automatically punched onto summary cards. These summary cards are used to tabulate data on mileage for each type of vehicle, average revenue for each type of vehicle, most-used and least-used interchanges, and traffic volume between interchanges.

The combined punched-card equipment and the axle-counting apparatus will enable the highway to carry a smooth flow of traffic with all data automatically recorded and checked.

How Essential Are Automobiles in Business Districts?

THERE IS NOTHING theoretical about automobiles. They are on the streets and highways for everybody to see. Those on the highways may be presumed to be the essential automobiles. The people in them are going somewhere and doubtless this is the most convenient method of getting there.

Automobiles on city streets, particularly in the business districts, are subject to question. Need they be there? Many of them do. Many of them do not.

All traffic planning and action are predicated on all automobiles, being essential wherever they may be. Streets are widened or made one-way, highways, freeways, and turnpikes are built, all for the comfort, convenience, and greater speed of greater numbers of drivers and the the ¾ of a person who is their average companion.

Stand on any street corner and watch the automobiles go by. See for yourself who the people are—if there is more than one in the car—who need a ton of metal to get them around the street while thousands walk or ride coaches. If you will meditate on what your eyes show you, it may be you will begin to suspect that too much respect, money, nervous energy, and furor are being accorded a Juggernaut.

Design Freeways for *All* the People

Only in recent years have traffic engineers discovered the pedestrian. He is now at the stage of being a necessary evil. He is a willful fellow who will neither wait at red lights nor cross only at intersections. He is a heavy participant in traffic fatalities. Something must be done to curb him—for the flow must go on. A few cities have pedestrian-traffic signals. Years of argument that proposed freeways be studied from the viewpoint of future need for rail rapid transit, are beginning to bear fruit in tardy recognition that these expensive superways are for only half of the people. Placing transit on them, where transit is needed, makes them closer to being popular improvements for all the people.

Accent City Transportation

There is no question, of course, of the importance of automobiles. Aside from their essentiality as a means of popular transportation, they are a backbone of peacetime economy. There is a reasonable question, however, as to how far privately owned automobiles should be permitted to dominate the traffic pattern of business districts in cities having serious congestion. When wide avenues are made one-way, as in New York City, the flow of vehicles is, of course, loosened and speeded. When narrower streets are made one-way, there is usually enough parking and truck-loading on both sides to limit the one-way flow to a single lane.

There are now 40,000,000 automobiles with 50,000,000 envisioned, and why stop there? Let 'em roll, but not into the business districts before 10 a.m. or from 4 to 7 p.m. in those cities which cannot handle the free-for-all. Make ever better local transportation a fetish. Think about it in the midst of all street and traffic planning including the projection of freeways, and provide it where needed. For in any event a better standard of service is essential to preserve a parity of advantage between the common carrier and the automobile if the suffocation of all street traffic by the tremendous increase in automobile use, in spite of the higher costs of the vexations of present-day driving, is to be avoided.

Northwestern Traffic Course to Be Nine Months

IN THE FALL the Traffic Institute of Northwestern University will lengthen its traffic-police administration course from 4½ months to 9 months.

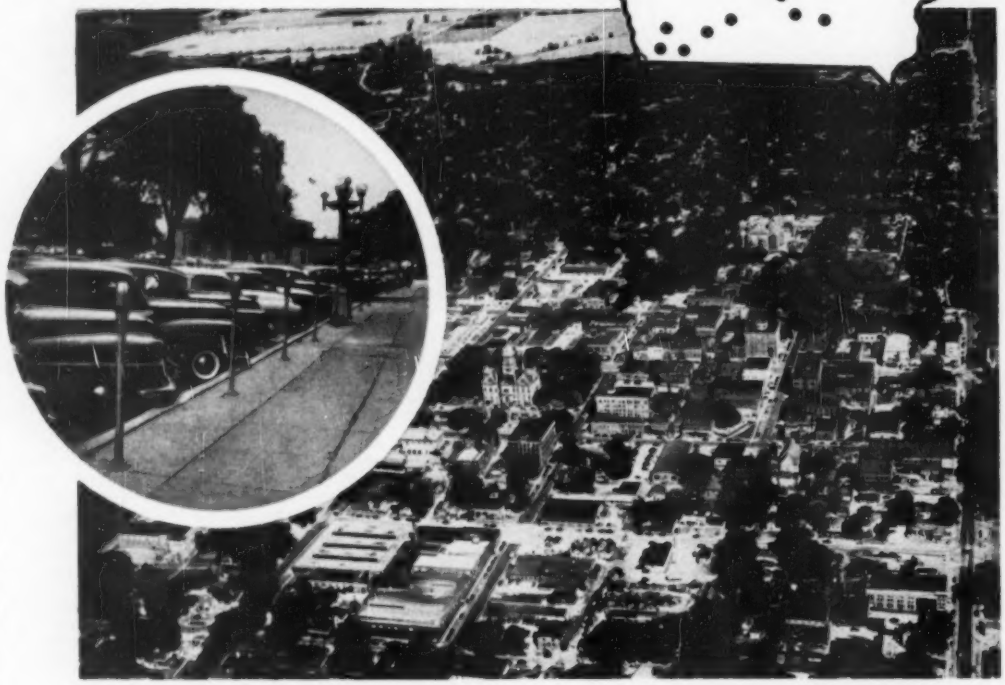
"Because of the extremely rapid growth of the nation's motor-vehicle transportation system, the police service has a more critical need for complete and thorough training in the supervision of street and highway traffic than ever before," Franklin M. Kreml, Institute director, said, in making the announcement.

Thirty-two grant-in-aid awards will be available to police departments to enable them to send officers for the 1952-53 traffic-police administration course. Eight fellowships and 8 tuition scholarships will be provided for municipal police officers by the Kemper Foundation for Traffic Safety, Chicago, and the same number and type of awards will be offered for state and county police officers by the Automotive Safety Foundation, Washington, D. C. (The amount of the awards will be announced at a later date).

The course will begin September 25, 1952, and continue through June 15, 1953. Applications for this course must be submitted to the Traffic Institute, 1704 Judson Ave., Evanston, Ill., by July 10, 1952.

To compete for admission and for award consideration, the applicant must be not more than 45 years of age and a police officer in active service with at least three years' police experience.

DUALS set the pace in IOWA



Inset, typical Dual installation in Marshalltown. *Aerial view, Marshalltown, Iowa.*

Marshalltown's experience leads 30 more communities to install Dual Automatic Parking Meters

ONCE Duals show what an efficient, economical job they do, communities want more of them—and *more* communities want them! Take Marshalltown, Iowa, for example. In 1946, Marshalltown installed 281 Duals. In 1947, 91 more—and in 1949, another 86. In 1951, an additional 350 Duals went to work.

So successful were Duals in Marshalltown, that 30 more Iowa communities installed them. Now almost 10,000 Duals are on the job throughout the state.

Such outstanding acceptance stems from basic Dual principles—building rugged parking meters that operate dependably in any weather—building meters so well that maintenance is remarkably low, proved in case after case.

And with Dual *gearshift* meters, communities gain *flexible* parking control; time and coin conversion can be made as required, on the spot.

If your community plans to install or modernize metered parking facilities, get the facts about Dual. See how Duals can do so much more—can be a long-term paying investment. Write for Bulletin DU-521 for on-street parking; Bulletin DU-522 for off-street parking.

THE DUAL PARKING METER COMPANY

A subsidiary of The Union Metal Manufacturing Company

Canton 2, Ohio

The Transit Dilemma

SO MANY ARTICLES have been written about the transit industry's troubles, transit needs, and the desperate condition of the transit companies, that one would think that long since transit must have folded or been cured. Most of these articles, however, are in the vein of "oh, my aching back" without producing the necessary medical facts. What's the matter with transit except lack of sufficient income—the aching back? Edward Dana, General Manager of Boston's Metropolitan Transit Authority, outlines the clinical history as follows:

Payrolls amount to as much as 70% of transit costs.

The mass-transportation systems are victims of excessive traffic congestion.

Decentralization has caused transit systems to lose riders.

The growth in numbers and use of automobiles has reduced passenger traffic, especially on Saturdays, Sundays, and holidays.

Public officials do not appreciate fully their responsibility toward the transit industry.

It is impossible to make transit vehicles look modern, since a company with 1,000 vehicles, lasting an average of 18 years, replaces only about 55 vehicles a year.

The influence of management, owing to the existence of unions and boards, is not as effective as formerly in persuading employees to be courteous toward patrons.

Despite the theory of politically minded individuals, the increased frequency of service cannot produce revenue beyond the point of the riding potential that actually exists.

Public officials follow a course favorable to automobiles and taxis.

Here are nine ills. What are the specifics? The constructive measures cannot be stated successfully without latching the ills onto actual transit systems. Can this be done? If it can't, then let's go on beefing into the blue sky.

Our annual publication, *The Municipal Index*, thinks it can be done and proposes to do it, with a great deal of solid cooperation, in the 1953 edition of that yearbook. That is a long way ahead, but as these and equally devastating ills have beset the industry for 30 years, it may be worth waiting for.

Private Parking Operators Unite

B. M. STANTON, President of the National Parking Association, has appointed Robert H. Blundred, formerly of the American Municipal Association, as his assistant. The association was organized last September in Chicago, and will be located in Washington, D. C. Members are operators of private parking lots and parking garages throughout the United States. The objective is to assist in determining and meeting the parking requirements of cities.

The association is already recommending to city officials a program of action for solving a community's "parking requirements." This plan is based on cooperation amongst all groups interested in solving this problem. This group usually consists of city officials, merchants, property owners, and private parking operators.

Private parking operators are urged to contact the association at its temporary office at 320 West 21st Street, Norfolk, Va., for further details as to its "aims and objectives."

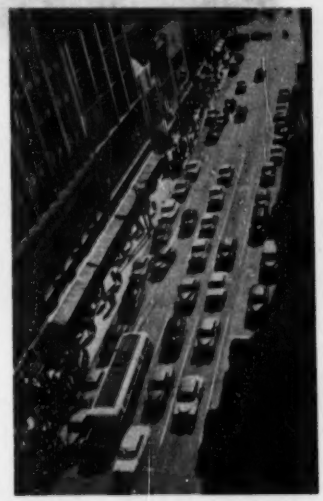
Still Better Transit Service Financed for Indianapolis

FIVE INDIANAPOLIS BANKS lent Indianapolis Railways, Inc., $1,700,000 for the purchase of 53 additional trolley coaches and 62 new motor coaches. A hundred of these vehicles will be in operation by the end of 1951. It's another revival.

Twenty years ago, Indianapolis did the best job of rehabilitation of any transit company in the country. The then president, Charles W. Chase, has passed on, but under W. Marshall Dale the success formula remains, as does the amazing fact that the company operates in an atmosphere of favorable public opinion. It may be that this opinion is the real encouragement for keeping the system up to snuff.

The city did something, too. It converted about half of the one-mile-square downtown section to one-way travel. While this cost the company $280,000 for overhead revamping of 25 of the 34 routes, this should be made up in greater safety, higher schedule speed, and more riders from the better service.

The fleet consists of 225 trolley coaches, 217 motor buses, and 35 streetcars. In 1950, these vehicles carried respectively 31, 28, and 9 million passengers. The favorable public opinion reflected again in the fact that 1951 riders—through October—were only 2% fewer than in 1950 against the national decline of 9%. The company's latest bow to its public is a change of the vehicle color scheme from red and cream to hunter's green and cream. No touch is too small when it's made to please customers.



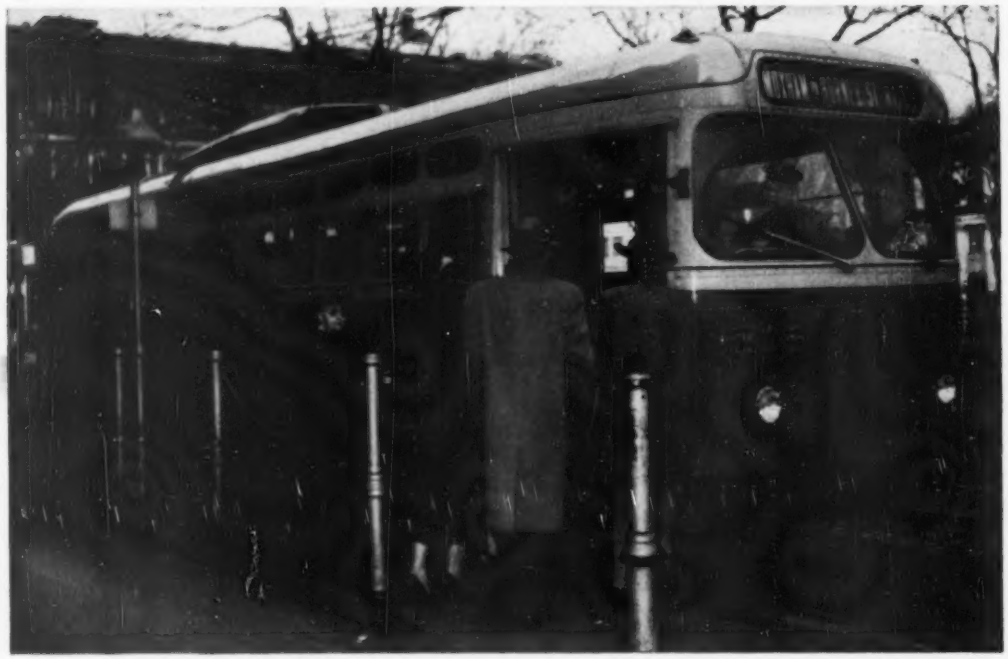
As seen from nine stories up, Illinois Street is evidence of the keen competition given public transit by the automobile in Indianapolis.

Use Lime to Stabilize Clay Soils

IF STREETS have to be built on soils that are plastic and clayey, with a plastic index greater than 20, you can stabilize them with concentrations of lime ranging between 2% and 10%, according to research reported by the Texas Engineering Experiment Station, Agricultural and Mechanical College of Texas, College Station, Texas.

The stabilizing reaction of the lime with the clay soils apparently is chemical in nature, resulting from the replacement of the weaker, positively charged metallic elements by the stronger, positively charged calcium cations of the lime, which, in turn, influence the thickness of the absorbed moisture films on the exterior of the clay grains. A reaction time of 24 hours is the minimum required. Stabilization seems permanent.

The research was conducted by Bob M. Gallaway and Spencer J. Buchanan and is reported in Experiment Station Bulletin No. 124.



PASSENGERS BOARD ONE OF THE SIX NEW TROLLEY COACHES PUT INTO SERVICE NOVEMBER 19TH BY THE JOHNSTOWN TRACTION COMPANY.

New Trolley Coaches Speed Service, Increase Revenue at Johnstown, Pa.

High schedule speeds, more trips per operating hour have improved service and increased per-vehicle revenue on Johnstown Traction Company's Horner Street line in Johnstown, Pa.

The line, newly converted to modern trolley coaches, serves Johnstown's 10,000-resident Moxham area with faster service and a cleaner, more comfortable ride. Running time has been cut from 30 minutes to 14 minutes on the 2½-mile route.

To Johnstown Traction Company management, the profit potential in the vehicles' marked passenger acceptance is further enhanced by low operating expense, simplified maintenance, and the long-life reliability inherent in electric drive.

Trolley coaches are making money and cutting costs on virtually every transit system where they've been applied. That's one of the big reasons why trolley coach applications have nearly doubled throughout the country in the last ten years. ***General Electric Co., Schenectady 5, N. Y.*** 151-44

You can put your confidence in—

GENERAL ELECTRIC

Omaha Park and Recreation Department Gets Mobile Show Wagon

A MOBILE STAGE UNIT for the presentation of outdoor talent shows has been presented to the children of Omaha by the World Herald Good Fellows Charities, Inc. The formal presentation on Sept. 16, 1951, preceded a fourteen-act stage show which featured some of the city's most talented youngsters.

The World Herald, Omaha's leading newspaper, through its youth activities director, ran a contest for the naming of this stage unit. Out of the many suggestions, the name "Show Wagon" was selected by the contest committee and a $25 defense bond was presented to the winning entry.

Side Drops Down to Make Stage

This unique vehicle cost in excess of $4,000 and is complete in every detail. The Show Wagon was designed by the Omaha Body Company and is arranged so that one side of what would normally be a van fifteen feet long and seven feet wide drops down and becomes a part of the stage. The wagon is mounted on a four-wheel trailer unit which can be fastened on the back of an ordinary truck and moved from playground to playground. It is equipped with its own sound system, piano, and a 5,000-watt generator for use when regular power is not available. Electrical outlets have been put in at strategic locations in the walls and floor of the Show Wagon and arrangements have also been included for foot lights which have been provided. The floor is of oak, highly polished and given several coats of Spar varnish. The stage and its facilities were designed by the Metropolitan Scenic Studios, one of the leading stage and sound companies in this area.

Our next year's summer program will include personnel to help develop and organize local talent shows at the various playgrounds. The interest of the *World Herald* was aroused by the Playground Follies which is put on at the end of each playground season. Each playground runs a show of its own and the best talent from each playground is selected for the Follies, which is presented at the end of the season. Up to the present time, these shows have been put on with nothing but a platform, lights, and a public address system and they have been so popular that the paper readily saw the need for a well-equipped mobile vehicle and also recognized the good will that could be created by such a gift to the children.

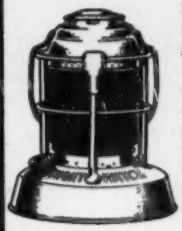
This piece of equipment was turned over to the Park and Recreation Department, which agreed to mantain and operate it. It was also agreed that this facility would be available to any organization in the community and it may be obtained through bookings for specific dates.

R. B. McClintock
Superintendent of Parks and Recreation
City of Omaha, Nebr.

Two tots get their start on the stage of the Show Wagon donated to the Omaha Park and Recreation Department by World Herald Good Fellows Charities, Inc.

There is No DETOUR from SAFETY when is on the Job

DIETZ NIGHT WATCH LANTERN



Releases Straight-line Pencil Beam of great intensity, visible from all angles, nearby and at really great distances. Exclusive fresnel globe and trip-lock release of chimney.

Burns 100 hours

First in safety—for safety first.

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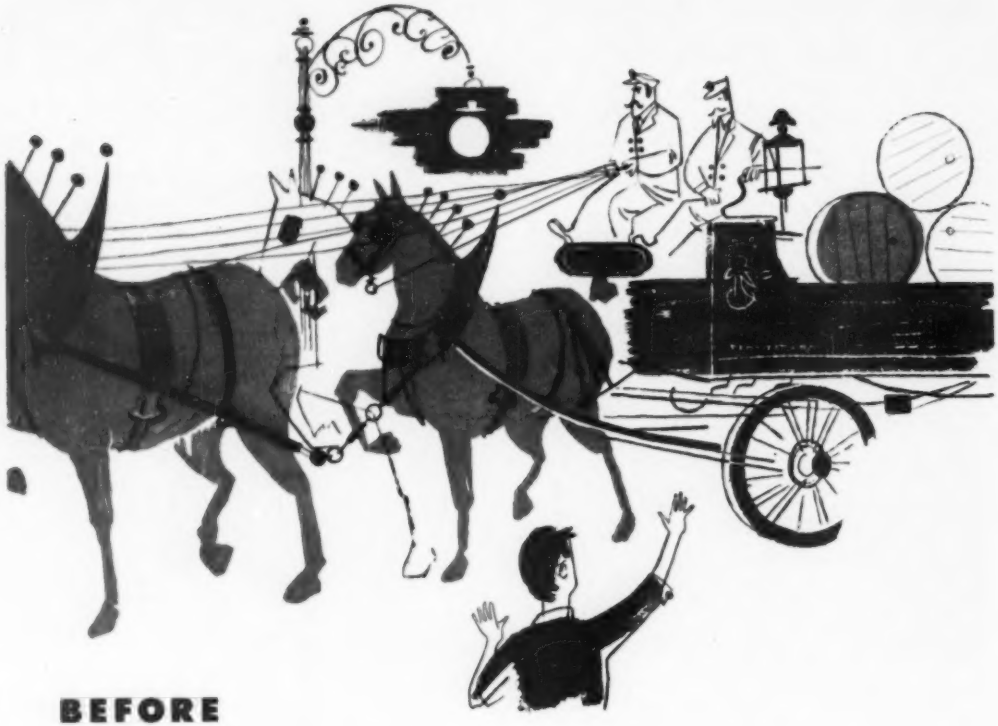

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, Jr.

Cemetery Prohibited in Residence District

CONNECTICUT. *Fairlawns Cemetery Ass'n, Inc.* v. *Zoning Commission of Town of Bethel*, 96 Atlantic (2d) 74 (Supreme Court of Errors, January 8, 1952).

A cemetery association organized by a Masonic order in 1938 acquired some 33 acres of land; but, after the death of the principal financial supporter, the enterprise languished, and in a receivership action the association subsequently alleged that it had "abandoned its business." The premises became run-down and overgrown with weeds and shrubbery. Subsequently, the premises were sold to another group who wanted first to use it for a crematory, and subsequently for a cemetery. The local zoning ordinance forbade both uses in residence and business districts, and the restriction was upheld in Court.

In the opinion, the Court emphasized that the town already had ample facilities for burial in three existing cemeteries. The opinion also argued that the premises were within view of a number of residences, that a cemetery would bring additional traffic into the area, that the previous use for a cemetery had been abandoned, and that:

> The town of Bethel has within its area three existing cemeteries, one Catholic and two nonsectarian. The population of the town is about 4,500, and growth in population for the last 25 years has been slow, although slightly accelerated in the last five years. The burial facilities of the town are amply sufficient for any reasonably foreseeable growth of the town in the future. The property owned by the plaintiff is surrounded by residences and small farms and is within sight of at least 12 such residences. The use of the property as a cemetery would result in an increase in traffic on the highways in the vicinity and, in consequence, a decrease in safety for the residents. It also would substantially lessen the values of residence property.

Ritual Baths—Not a Church

NEW JERSEY. *Sexton* v. *Bates*, 85 Atlantic (2d) 833 (Superior Court, December 31, 1951).

The regulations for the First Residence District in Newark permitted single-family houses, churches, accessory uses, and a few other uses. In this case, the court decided that a "mikvah" or ritualarium did not constitute a church and therefore was not permitted in such a district.

The opinion contains a detailed description of a mikvah, and its significance in orthodox Jewish ritual. A mikvah is a ritual bath taken by women in water drawn from a natural source (a spring or rain), primarily for the purpose of purification and sanctification and only secondarily for hygienic purposes. A religious document introduced at the trial described modern mikvahs as providing individual bathing facilities, "bathrooms with colored tubs, tiled floors, and walls lined with beveled mirrors," ultra-violet lamps, and various modern beauty-parlor facilities. In holding that a mikvah did not constitute a church, the Court stated: "The fact that a mikvah is devoted to performance of certain religious rites by females, does not constitute it a building set apart for public worship, as a church in the main understanding and meaning of that word."

The Court also held (following a good deal of precedent) that a restriction of such establishments from residence districts was not a restriction on freedom of religion.

Dumping Near Airport —Injunction Prohibits

NEW JERSEY. *Port of New York Authority* v. *City of Newark*, 85 Atlantic (2d) 815 (Superior Court, January 4, 1952).

When the Port of New York Authority took over Newark Airport by a lease in 1948, the City of Newark agreed to stop dumping garbage and refuse on certain parts of the airport within about a year; and several extensions of time were granted by the Port Authority on the deadline for discontinuing dumping. After these deadlines had passed, the Port Authority brought an action for an injunction against the dumping, alleging that the garbage caused distasteful and odorous fumes, constituted a source of spontaneous combustion and smoke, and provided a breeding and feeding ground for flocks of sea gulls, thereby endangering flight operations. In reply, the City of Newark argued that there was no other place to put the stuff. Nevertheless, the Court granted an injunction against such dumping.

Filling-Station Variance Upheld in General Residence District

NEW HAMPSHIRE. *Gelinas* v. *City of Portsmouth*, 85 Atlantic (2d) 896 (Supreme Court, January 2, 1952).

This case involved a proposed filling station on a lot located along, and with access to, a new four-lane super-highway known as the "Maine-New Hampshire Interstate Bridge Authority Highway," which bypasses Portsmouth. The lot was located on swampy land used primarily as a dump, some distance to the rear of a group of houses, and was in a general residence district. The applicants proposed to build a wire fence around the premises, particularly since a school was located in the vicinity. The Court held that in this instance the property was useless for residence purposes, and that, therefore, a variance for a filling station was appropriate. In the opinion, emphasis was laid on the changes in the surrounding area resulting from the super-highway, and the fact that the area was zoned for general residence rather than single-family residence.

This case points up a familiar problem —the effect of new super-highway facilities on the use of adjacent land. With a parkway, with substantial land owned on either side and access severely limited, the problem arises chiefly around the points of access; but otherwise (as here) the problem exists along the super-highway. Unless restrictions are imposed, such areas will be developed with billboards, lunch wagons, restaurants and bars with flashing neon signs, hamburger joints, pizzerias, dog wagons, cheap furniture and toy stores, outdoor golf-driving ranges, and the like.

Exclusion of Church from Single-Family District

CALIFORNIA. *City of Chico* v. *First Avenue Baptist Church of Chico*, 233 Pacific (2d) 587 (District Court of Appeal, Dec. 20, 1951.)

In this case, the Court upheld a regulation excluding a church from a single-family residence district in accordance with another recent California decision on the point.

Six 1952 Institutes For Commercial and Trade Organization Executives

THE COMMERCIAL ORGANIZATION DEPARTMENT of the Chamber of Commerce of the United States announces the following list of the 1952 institutes for chamber of commerce executives, together with the names and addresses of the managers.

As heretofore, these institutes will offer an exceedingly valuable opportunity for training in fundamentals and for an exchange of ideas among present and prospective commercial and trade organization executives.

June 8-14 (tentative)—
Western Institute for Commercial and Trade Executives
University of Oregon, Eugene, Ore.
William E. Hammond, Manager
333 Pine Street, San Francisco 4, Calif.

June 15-21—
Southeastern Institute for Commercial Organization Executives
University of North Carolina, Chapel Hill, North Carolina
Ed H. Cherry, Manager
619-621 Volunteer Building, Atlanta 3, Ga.

July 6-12—
Rocky Mountain Institute
Montana State University, Missoula, Mont.
J. R. Pratt, Secretary-Treasurer
1310 Rand Tower, Minneapolis 2, Minn.

July 13-19—
Southwestern Chamber of Commerce Institute
Adolphus Hotel, Dallas, Texas
D. Hodson Lewis, Manager
300 Dallas Chamber of Commerce Building, Dallas 2, Texas

August 3-9—
Northeastern Institute for Commercial and Trade Organization Executives
Silliman College, Yale University, New Haven, Conn.
John Soltmann, Manager
420 Lexington Avenue, Room 1724, New York 17, N. Y.

August 10-16—
National Institute for Commercial and Trade Organization Executives
Northwestern University, Evanston, Ill.
S. Spencer Shaw, Manager
830-834 First National Bank Building, Chicago 3, Ill.

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Position.....

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North Bay Attracts Added Tourist Dollars Through Police Tourist Courtesy School

By T. M. PALMER
Mayor
North Bay, Ontario

THE VALUE OF COURTESY to the stranger within our gates has become more and more evident to North Bay's 19,000 residents, as we have watched—and helped—our tourist trade grow into a major industry ($5,700,000 in tourist dollars in 1951).

With both the federal and provincial governments expanding their publicity and advertising campaigns in search of new tourist dollars, competition became very keen between those vacation areas of Canada offering attractions to the holiday visitor. As Mayor, I was aware as were members of my council, that North Bay—"Gateway of the North"—had been richly blessed by nature. Here we had not one, but two beautiful lakes; miles of safe, sandy beaches; hundreds of comfortable resorts; and clean, fresh, pine-scented air. All around us, fringing the wide paved highways, were hundreds of thousands of acres of wilderness country dotted by thousands of fish-filled lakes and streams and abounding in wildlife. And within a few miles is the home of the Dionne Quintuplets, the home of the late Dr. Allen Dafoe, and the now famous nursery and playground of the Quints.

But all this, we knew, could be wasted if the human element let us down. If we were to remain one of Ontario's favorite vacation playgrounds and the jumping-off place for vacation districts further afield, we had to make sure that our visitors found us to be good hosts. And so it was that the Aldermen of the City Council and myself, in company with other officials, including the North Bay Chamber of Commerce, which boasts the largest per capita membership in Canada, laid plans for a city-wide courtesy campaign emphasizing the ABC's (Always Be Courteous) of good business.

An Idea Is Born

Realizing that many of our vacation guests are hungry for information and are not always aware that they can get it from the Chamber of Commerce log-cabin Information Bureau, we set out to train our police officers, service-station attendants, merchants, sales clerks, waitresses—even our private citizens—in the art of providing information accurately and pleasantly. As the idea caught on, not only North Bay policemen but those of the Ontario Provincial Police; railway police of the Canadian National, Canadian Pacific, and Ontario Northland Railways; Royal Canadian Mounted Police, and constables from adjoining municipalities volunteered to participate in this courtesy and information campaign.

And so was born what we called—for lack of a better name—our Police Tourist Courtesy School. Now three years old, it has been expanded to include citizens of many other occupations, and has won an important place in community affairs.

Once we made our plans known, we received enthusiastic cooperation from many sources: the Ontario Department of Travel and Publicity, Carling's Conservation Club, the Imperial Oil Company, the Ontario Department of Lands and Forests, and many others, provided us with films, top-notch speakers and public-relations advisers, and valuable information assuring the success of the "School."

Classes are conducted in a North Bay hotel—starting at 9 o'clock in the morning. Lectures, exhibits, films, and short discussion periods highlight the morning sessions. There is a break for luncheon, given by the city, and in the afternoon the classes resume. In the evening, at

...if she knew what Centriline means to her

Each time this lady, and millions like her, turns on her water faucet, she benefits from the Centriline process. In cities where water pipes and mains have been Centrilined, there will be no loss in pressure, or water contamination due to corrosion and tuberculation . . . no increase in water bills for her due to increased pumping and maintenance costs . . . no inconvenience due to torn-up streets. Yes, this lady *should* know about Centrilining . . . and so should *you*. The Centriline process thoroughly cleans pipelines *in place* up to 144" in diameter—coats the walls centrifugally with strong cement-mortar and trowels it to a smooth even surface . . . strengthening the pipe . . . making it better than new. Corrosion is prevented, leakage is stopped, flow capacity improved. Write for your copy of Centriline's new booklet describing this time proven process.

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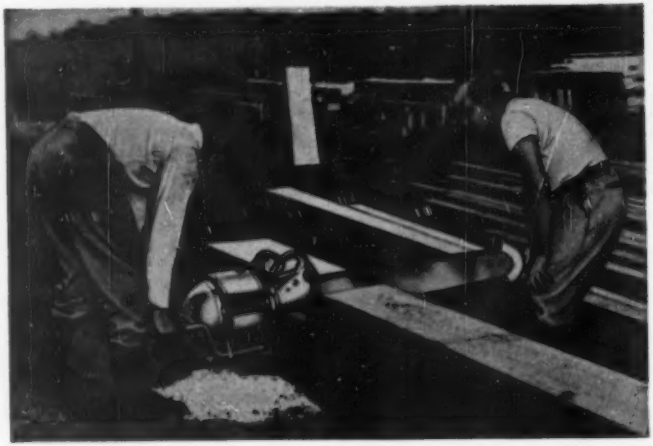
ON THE WEST COAST, WRITE PIPE LININGS, INC., P. O. BOX 3428, TERMINAL ANNEX, LOS ANGELES, CALIFORNIA

New! LIGHTWEIGHT 9 HP DISSTON INTERMEDIATE CHAIN SAW

that handles any woodcutting job!



Here's the power chain saw you've been waiting for—the new 9 hp, 2 cylinder Disston Intermediate Chain Saw, the DA-211. Powerful enough to handle any woodcutting job—yet its balanced light weight makes it easy to heft. It will give you many years of satisfying, trouble-free cutting power.

ALL-AROUND TOOL! The Disston Intermediate is perfect for right-of-way and line clearance, cuts mine props and bridge timbers with ease, has hundreds of uses in shipyards and on railroads, as well as for general plant maintenance.

LABOR-SAVING? And how! Time-saving, too. The DA-211 can do in a few minutes the work of an hour's manual sawing.

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11-D

the North Bay Vocational School auditorium, an open meeting is held. Here, sales clerks, waitresses, garage attendants, businessmen, and the general public are provided with a graphic picture of courtesy's value in building and holding our multi-million-dollar tourist industry.

Persons attending this special meeting are told of what a visitor might expect in the way of information: where to fish; the nearest gas station; historical sites; mileages to this or that point; road conditions; hotel, cabin, cottage, or resort accommodation; the places to shop for specific items of merchandise; cost of fishing licenses; hunting season, and numerous other likely inquiries. They are shown, through charts and figures, how tourist dollars go eventually into everybody's pockets; why the tourist business is everybody's business—the merchant's, the hairdresser's, the grocer's, the railroader's, the farmer's, the lawyer's, the food handler's, and the average citizen's.

Benefits to Visitors and Hosts

As a result of these "courtesy classes," the policeman in North Bay considers the tourist with a new appreciation. The store clerk serves the holiday guest with a new interest. And citizens, generally, take new pride in helping to make North Bay known as one of Canada's friendliest, most courteous tourist communities. Our people are more impressed today than ever before by the fact that the vacation visitor is a human being looking for relaxation and pleasure just like themselves, and that, if treated courteously, he will become our good friend and acquaintance.

Much of the success of this unique venture may be attributed to the tireless efforts of Col. W. W. Johnson, tourist representative for the Ontario Northland Railway and a director of the Canadian Tourist Association. Sparked by men like Walter Johnson, and the many others genuinely interested in civic welfare, North Bay's "Tourist Courtesy School" has not only helped to expand a vital industry, but has enhanced "The Gateway City's" reputation for hospitality throughout Canada, the United States, and many countries beyond the seas!

THE ANNUAL INDEX

listing by subjects and by cities the articles and items published in *The American City* for the 12 issues for 1951 is available without charge to subscribers for the magazine. Address requests to 470 Fourth Ave., New York 16, N. Y.

Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Airports—Muddy Trench Contiguous To Parking Apron—Liability of City for Damages

In action against the city for damages to plaintiff's airplane caused by city's failure to warn of soft and muddy trench contiguous to newly constructed concrete parking apron on airport, held that whether city impliedly invited operators of aircraft to use airport so as to impose upon city duty of ordinary care was question for jury. *Behnke* v. *City of Moberly*, 243 S. W. (2d) 549 (Mo. App., Nov. 5, 1951).

Assessments—Street Improvements

In action against city to cancel special assessments on property abutting street which had been repaved, held that evidence established that property had been benefited from repavement and assessments were valid. *Rosche* v. *City of Hollywood*, 55 So. (2d) 909 (Fla., Jan. 4, 1952).

Bonds—Payable Only Out of Revenue Of Water-Works System—Validity

In action against city to compel city clerk and city treasurer to sign bonds, held that ordinance authorizing issuance of city water bonds is not invalid as authorizing the incurring of indebtedness contrary to the state constitution requiring a vote of the people. *City of Glendale* v *Chapman*, 238 Pac. (2d) 162 (Calif. Dist. Ct. of App., Dec. 7, 1951).

City Employees—Salary Received Below Rate Fixed By Ordinance—Recovery Barred By Statute of Limitations

In action against city to recover difference between amount paid plaintiff as fireman and amount fixed by ordinance, held plaintiff could not recover since city was not bound by any agreement and action was barred by statute of limitations. *Welch* v. *City of Lima*, 102 N. E. (2d) 888 (Ohio App., July 10, 1950).

City Officers—Holding Two Offices Simultaneously—Recovery of Salary

In action to recover for public-treasury moneys allegedly received by defendant in violation of law, held that money defendant received for services rendered as municipal judge while he held the office of mayor could be recovered into the public treasuries. *Revis* v. *Harris et al.*, 243 S. W. (2d) 747 (Ark., Nov. 19, 1951).

City Property—Lease to Federal Agency For Profit Bars Tax Exemption

In appeal from denial of application by city for exemption from taxation of property allegedly used for a public purpose, held that where property had been used for airport purposes and subsequently leased to federal agency for storage of grain, and storage bins were erected upon such property, property was no longer used for public purposes and exemption was properly denied. *City of Dayton* v. *Haines*, 102 N. E. (2d) 500 (Ohio, Dec. 12, 1951).

Cost-of-Living Bonus—Discretion in Awarding

In action to recover cost-of-living bonus during time plaintiff was mortgage-tax examiner in tax bureau of city, held that where appropriation for bonus provided payment of bonus to "low-paid employees," and where who were such employees and how much bonus was to be given was left to discretion of budget director, plaintiff had no basis for maintaining the action. *Goodman* v. *City of New York*, 108 N. Y. S. (2d) 2 (N. Y. Mun. Ct., Sept. 14, 1951).

Dogs—Giving to Hospitals for Research Ministerial Act—Validity of Muzzle Requirement

In action seeking to restrain Dog Warden of City of Cleveland from giving impounded dogs to hospital for research purposes, held that ordinance providing that dogs running at large be muzzled and that unmuzzled dogs would be impounded was valid, and action of Dog Warden in turning over impounded dogs to hospitals for research purposes was an exercise of ministerial duty properly delegated. *Kovar* v. *City of Cleveland*, 102 N. E. (2d) 472 (Ohio App., Feb. 26, 1951).

Election to Abolish Corporate Existence Within Year of Incorporation—Validity

In action to restrain assessment of taxes within City of Eagle Ford on ground that city had been disincorporated, held that election to abolish corporate existence was valid though held within one year of election for incorporation. *Polk* v. *Vance et al.*, 243 S. W. (2d) 819 (Tex., Nov. 21, 1951).

Franchises—Public Utilities—Requiring Removal of Underground Conduits At Grade-Elimination Project

In action against city to test validity of resolution requiring telephone company to relocate facilities at its own expense at grade elimination project, held that since wires were no source of danger and of no benefit to company as relocated, and since other utilities were reimbursed for their expenditures, resolution was discriminatory and unreasonable. *Southern Bell Telephone Co.* v. *City of Nashville*, 243 S. W. (2d) 617 (Tenn. App., May 30, 1951, *cert. denied* by S. Ct., Oct. 9, 1951).

License Taxes—Interstate Commerce—Doing Business

In action against city to recover a license tax paid by nonresident corporation under protest, held that where corporation sold and delivered petroleum products to purchasers in city, and such sales were made upon orders placed with corporation and accepted at its place of business in another state, city ordinance imposing a license tax upon nonresident corporations doing business in city as applied to plaintiff was not invalid as infringing commerce clause of federal constitution. *Sanford Service Co.* v. *City of Andalusia*, 55 So. (2d) 854 (Ala. App., May 1, 1951).

Licenses—Issued in Violation of Zoning Ordinance—Estoppel

In action to enjoin enforcement of zoning ordinance, held that even though city had issued restaurant license to plaintiff's predecessor from 1934 to 1948 notwithstanding that operation of restaurant was in violation of law, city was not equitably estopped from enforcing zoning ordinance against plaintiff who purchased premises in 1948, and license was properly denied. *Kilko* v. *City of Cleveland*, 102 N. E. (2d) 476 (Ohio App., Feb. 19, 1951).

Parking Meters—Ordinance Sustained

In appeal from conviction of violation of parking-meter ordinance of city, held that ordinance was not void on the ground that it was a revenue measure and not a regulatory measure and did not violate the commerce clause merely because the meters were located on a state highway. *Greenwood* v. *City of Washington*, 102 N. E. (2d) 642 (Ind., Jan. 3, 1951.)

Pensions—Election of Employee Where Two Funds Provided

In action against city to compel payment of pension equal to one-half of salary at time of retirement, held that plaintiff was entitled to benefits of act dealing with pensions for city employees generally though he was member of pension fund provided for employees of department of health and he could elect to take pension under the act dealing with pensions for city employees generally. *Craster* v. *Board of Commissioners of City of Newark*, 85 Atl. (2d) 13 (N. J. Super. Ct., Nov. 29, 1951).

Policemen—Removal—Withdrawal of Resignation

In action against city to compel reinstatement of relator to police force, held that acts of relator justified city in refusing to restore him to duty and that reliance of city authorities upon his resignation in filling vacancy estopped relator from withdrawing his resignation. *State ex rel Kraft* v. *City of Massillon*, 102 N. E. (2d) 39 (Ohio App., Feb. 6, 1951).

Reservoir in Park Not Attractive Nuisance

In action against city to recover damages for drowning of minor son in reservoir in playground area of park, held that attractive-nuisance doctrine was not applicable since reservoir was surrounded by fence and concrete spillway from which boy slipped into reservoir was an obvious source of danger. *Betts* v. *City and County of San Francisco*, 239 Pac. (2d) 456 (Calif. Dist. Ct. App., Jan. 16, 1952).

Streets—Excavation—Liability of City

In action against city to recover damages for injuries sustained by a passenger resulting from the penetration into the streetcar of a metal pipe, held that the doctrine of res ipsa loquitur was inapplicable in the absence of a showing that the pipe which caused the injury was within the exclusive control and possession of the defendant. *Blaice* v. *City of New York*, 108 N. Y. S. (2d) 847 (N. Y. S. Ct., App. Div., Dec. 10, 1951).

Pace Setters
in lawn maintenance performance

Jacobsen POWER MOWERS AND LEAF MILLS

1 Worthington Heavy-Duty Rotary Disc Mowers
These big-capacity mowers handle lawns or rough areas with equal ease. Rotating blades cut tall growths, chop clippings to a fine mulch . . . restore seldom-cut areas to lawn smoothness in one cutting. Four heavy-duty models offer cutting widths from 31 to 62 inches.

2 Worthington 18 Rotary Disc Mower
18-inch cutting width
Here is a highly portable, triple-duty mower for grass-cutting, weed control and trimming. Weighing only 67½ lb., a man can lift it into a pickup truck or car trunk to handle widely scattered jobs. With front guard raised, the 18 will cut right up to obstructions, eliminating much hand trimming.

3 Jacobsen Estate 24 — 24-inch cutting width
The Estate 24 is designed to produce unmatched smoothness of cut on fine, landscaped lawns. Rear roller drive does not flatten uncut grass . . . allows exceptionally close trimming around flower beds and shrubbery. Powerful 1¾ hp. Jacobsen Engine easily pulls a riding sulky.

4 Jacobsen 30-Inch Leaf Mill.
The 30-inch Leaf Mill picks up leaves, grinds them into fine particles and returns them to the lawn as valuable mulch. On one large park maintenance operation, the Jacobsen Leaf Mill replaced ten men with rakes and two trucks for hauling leaves away. Write for details.

JACOBSEN MANUFACTURING COMPANY
Racine, Wisconsin

The Older the Street, the Better It Gets

Seattle develops a street program—with resurfacing done on a continuing basis —to produce non-skid, smooth streets

By R. W. FINKE, *City Engineer, Seattle, Wash.*

IN SEATTLE, virtually no street is ever in so bad a condition that we cannot rehabilitate it and make it better than new. Rarely have we had a street with a substantially paved surface that we have had to tear out and replace.

We have 1,572 miles of platted streets within the corporate limits. Of these, approximately 1,000 miles are paved. For many years, an occasional street or portion of a street would be resurfaced when surface conditions became particularly bad, but no general or comprehensive plan of resurfacing was adopted until 1941. Starting that year, and annually since then, the street department has surfaced between 25 and 30 miles of streets.

During the past 11 years, we have laid 707,394 tons of asphaltic concrete, or an average of 64,303 tons per year to resurface these neglected streets. Seattle's topography is hilly, and at the start of this program we had a number of miles of brick pavement that was particularly hazardous during wet or frosty weather. So our first resurfacing was confined largely to this type of pavement. We had many expressions of gratitude from the public as a result of this.

Since the completion of the brick resurfacing, we have turned our attention to the sandstone and granite-block pavements that were originally installed on some of the steeper grades. An asphalt resurfacing of these has improved the riding qualities.

During this same period, some of our older concrete streets came in for attention. Many had cracked and settled, reaching a condition that was rough to the driver and not particularly attractive for anyone. We rehabilitated considerable mileage of these streets, utilizing the existing concrete as a base and resurfacing with 2 inches of asphaltic concrete, thereby producing at a reasonable cost a roadway which is capable of serving the public for many additional years.

We also have within the city many miles of sheet-asphalt pavement. The major portion of this was laid between 1900 and 1916, and obviously had oxidized, cracked, and deteriorated since then. On these streets, base failures were repaired and the surface planed with a planer-burner to remove the oxidized surface as well as to correct minor irregularities in the pavement. Resurfacing these streets has given them a new lease on life, and several—8 to 10 years of age—are apparently as good as the day they were resurfaced.

City-Owned Asphalt Plant

All material utilized in this resurfacing program is produced in our own Standard Steel asphalt plant, and hauled and placed by city forces. Laying is done with a Barber-Greene asphalt spreader. The plant capacity is 850 tons for an 8-hour day. Our top yearly production reached 93,000 tons. Basalt ledge rock and sand, used in the mix, are obtained locally, and asphalt is shipped in from the California fields.

Our 1951 asphalt resurfacing program was smaller than average. Some 46,516 tons of asphaltic concrete were placed by city forces on 425,379 square yards of street. The work was started on May 16 and completed on October 15.

The surfacing averages 2 inches in thickness and was placed at an average cost of $6.38 per ton, or 69 cents per square yard. The costs include planning, leveling, and repairs to the base preliminary to resurfacing. An open-type mix, which has good, non-skid qualities, is used in this work. It is our endeavor to produce a dense and

stable water-resistant mix which will stand up under modern traffic in our climatic condition. A typical mix is as follows:

Screen	¾"	½"	⅜"	¼"	#10	#40	#80	#200
Per Cent Passing	100	78	62	47	29	17	16	3

The percentage of asphalt for this mix is 6.3%.

Our resurfacing program is not yet completed. Many miles of old pavements, particularly sheet top, still need resurfacing. An increasing number of heavily traveled concrete streets are reaching a stage of breakdown and deterioration where this treatment will be necessary within the next few years if their life is to be prolonged.

A preliminary survey of streets within the city indicates that a full program of resurfacing, requiring 50,000 to 60,000 tons of asphalt mix, will be necessary during the next year. We anticipate being able to reduce this figure gradually within the next two years as most older areas will be resurfaced by that time.

The work is conducted under the direction of the writer and W. R. Johnson, principal engineer in charge of maintenance, with E. O. Dunlap, Supervisor of Asphaltic Paving, in charge of the placement of this paving.

Raleigh Makes Aerial Survey

THE CITY OF RALEIGH, N. C., is buying complete new mapping coverage of the 60-square-mile Raleigh area for $34,000. The aerial survey is being executed by the Aero Service Corporation, of 235 East Courtland Street, Philadelphia, Pa., and all maps are to be delivered during 1952.

Flying started early this year. The aerial photographing requires a week. Within 60 days after the flying is finished, the aerial photos will be compiled in an accurate, controlled mosaic. The photo-map of Raleigh and its environs will cover 60 square miles at a scale of 1 inch to 600 feet. Aero Service will deliver two such maps, one for the city engineer's office and the other for the city manager. The photos and mosaic represent about $5,000 of the total cost of $34,000 for the survey.

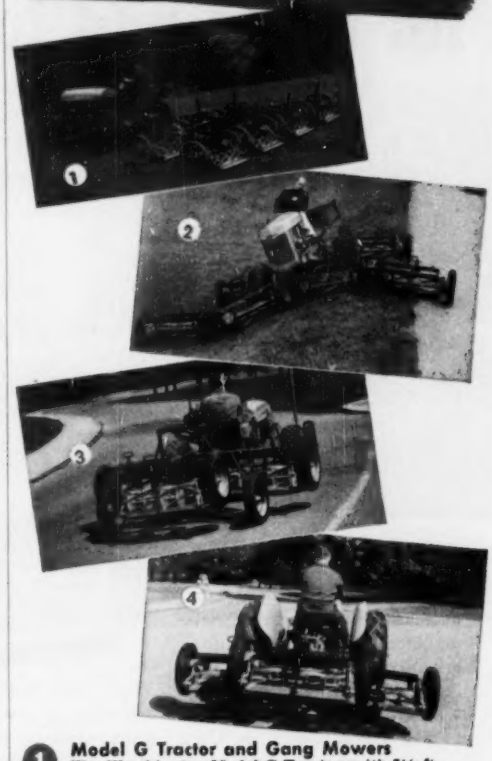
In addition to the photo-maps, which are useful for general planning purposes, detailed topographic maps, at a 5-foot contour interval and a scale of 1 inch to 200 feet, will be compiled. They will show all buildings, streams, and works of man, and will be used primarily for engineering purposes. The first map delivery will be made this summer, and the rest will be delivered as completed. All maps will cover a 40-square-mile area.

Raleigh's rapid growth in new industry and population called for current map information for city planning and engineering requirements. The program was developed by City Engineer James Lambeth and City Planning Director James Stevens, under the direction of Raleigh's City Manager, W. H. Carper. The City Council, headed by Mayor James Briggs, approved the project. Raleigh's growth during the past decade points up the need for the maps. In 1940 the population was 46,897, and in 1950 it was 65,123.

Raleigh is the second Tar Heel city to buy new maps. Durham completed its mapping program in 1951; the survey by aerial method was also performed by Aero.

Speed Artists
for every Large Area Mowing Job—

WORTHINGTON TRACTORS AND GANG MOWERS



1 Model G Tractor and Gang Mowers
The Worthington Model G Tractor, with 5½-ft. turning radius and big, low pressure tires, is especially designed for pulling Worthington gang mowers. Gang mowers for the G include 3, 5 or 7-gang Fairway Mowers, and 3, 5, 7 or 9-gang Rough Grass Blitzers.

2 Model F Chief Tractor and Gang Mowers
Front-mounted gangs on the Model F Chief are always in full view of the operator . . . provide the greatest maneuverability . . . cut grass before tractor wheels touch it to eliminate streaking.

3 Model G Tractor and Self-Lift Ranger
Here's an ideal combination for cutting widely separated lawn areas. Transport wheels on this three-gang mower lower into place hydraulically. Simultaneously, mowers are raised for fast, between-jobs travel. The Self-Lift Ranger is also adaptable to all makes of tractors.

4 Ranger for Ford and Ferguson Tractors
Three 30-inch units cutting a 7-foot swath, utilize the Ford or Ferguson Hydraulic Lift Attachment for raising and lowering to give safe, fast transportation from one cutting area to another.

WORTHINGTON MOWER COMPANY
Stroudsburg, Pennsylvania

Job-proved tax-saver for cities and towns

"Cut Sewer Dept. costs 75%!"—says Rockford, Ill.
LOOK!
High speed Bantam clamshell
Sells for less than $6300.00*
*Price subject to change.

Over 3000 Bantams in service prove the adaptability and economy of this versatile truck-mounted machine for handling a wide range of municipal jobs. "One-man" Bantam drives anywhere over city streets, black top or off highway at truck speeds . . . maneuvers in close quarters where bigger machines can't go . . . *loads up to 80 cu. yds. of bulk material per hr. with clamshell* . . . lifts 10,000 lb. loads on crane boom.

You'll find Bantam ideal for handling sewer and water repairs, cleaning ditches, removing debris . . . saves time stockpiling gravel, cinders . . . handles pipe, concrete, timbers, etc., at new low cost. Investigate Bantam economy for your city — TODAY!

SB-CL-2

TEAR OFF AND MAIL THIS HANDY COUPON NOW

Schield Bantam Co., 234 Park St., Waverly, Iowa

☐ *Send details on BANTAM Clamshell for truck mounting*

Name _____ Title _____

Dept. _____

Address _____

City _____ State _____

SCHIELD BANTAM

Cranes • Excavators

Get more jobs done at less cost

Seattle Voters Become Gold-Feather Citizens

CITIES whose residents do poorly in turning out to vote at municipal elections can well borrow a technique used successfully in Seattle. The Municipal League of Seattle and King County reported that only 39 per cent of the city's adult population voted at the mayoralty election in 1948. To combat this poor record, a coordinated get-out-the-vote campaign was sponsored by the Municipal League, the League of Women Voters, and the Seattle Junior Chamber of Commerce. A small gold feather was presented to each voter who cast his ballot at the city election on March 11. The feathers were made available in each of the county's 1,300 precincts through the cooperation of County Auditor Robert Morris and Election Superintendent Logan. As each voter went to the polls, he was handed the feather, with the theme "Wear it proudly . . . . it is your badge of good citizenship." Voters were urged to wear their gold feather not only on election day, but throughout the rest of the week as a symbol of their willingness to accept the responsibilities of citizenship.

I VOTED.. DID YOU?
BE A
"Gold Feather"
CITIZEN
VOTE Tues. MARCH 11
Get your gold feather when you vote. Wear it with pride! It is your badge of good citizenship!

Community-Locker Kitchens Can Save Home-Grown Fruits, Vegetables

A COMMUNITY LOCKER KITCHEN for processing fruits and vegetables, offers an excellent method for conserving home-grown produce and makes good use of the locker plant during the summer, ordinarily a slack season in the plant. These findings are based on cooperative studies over the past two years by agricultural engineers of the United States Department of Agriculture, the Georgia Experiment Station, and the

(*Continued on page* 165)

Your Community will accept the

COMMUNITY-WIDE

Garbage Grinder Plan

as Suggested by Waste King Pulverator

Progressive-minded Public Officials are joining the crusade for Garbage-free living!

To begin the Community-wide Garbage Grinder Plan, the Public Official must first pave the way by eliminating existing obstructions in antiquated ordinances that may retard the progress of the Plan. This can be accomplished by proceeding as follows:

1. **Adopt new ordinances to permit installation of garbage grinders and, when necessary, to modify existing plumbing and electrical codes.**
2. **Organize an educational program that will express the community's need for a Community-wide Garbage Grinder Plan. It is to be presented to the public to enlist their support for Garbage-free Living.**
3. **Prepare ordinances requiring the installation of garbage grinders in new and existing dwellings and in all food-preparing and food-serving establishments for the health and safety of the individual.**
4. **Give the public the right to choose garbage grinders by type, brand, model and features that meet with their preferences.**

The public will be able to purchase their brand sold by local merchants, who provide the service, installation and coordinate local financing.

Cooperative local merchants will assist the Plan at all levels!

Waste King KITCHEN PULVERATOR CONTINUOUS FEED

AMERICA'S FINEST GARBAGE DISPOSER

On the basis of free-selection by product and free-enterprise with local merchants and businesses, the community benefits . . . *The Public Official is relieved of the grievous and burdensome liability of financing and selecting garbage grinders.*

Select groups are appointed by the Public Official to execute the Plan in its minutest detail.

Reputable manufacturers of garbage grinders should be invited by the Public Official and Group Leaders to lend assistance in every way possible. They have the experience and facilities to promote the Plan and are willing to cooperate and undertake a concentrated program in conjunction with their dealer organization.

When completed, the Community-wide Garbage Grinder Plan, as suggested by Waste King Pulverator, will end forever the age-old problem of garbage collection and disposal.

An invitation is extended to Public Officials to investigate the Community-wide Garbage Grinder Plan by writing for further information.

GIVEN MFG. CO.

3301 E. Fruitland

Los Angeles 58, Calif.

Dept. AC4, Given Mfg. Co.
1250 Wilshire Blvd., Los Angeles 17, Calif.

☐ Please send further information on the Community-wide Garbage Grinder Plan.

Name_____

Address_____

City_____ Zone____ State_____

Title_____

WILL YOUR CITY BE THE ACHILLES HEEL IN AMERICAN DEFENSE?

Many American cities, such as Philadelphia, Boston, Newark, Richmond, Providence, New Orleans, and El Paso have already installed or purchased Federal air raid warning systems and are instructing their citizens in its meaning. Others who see the logic of Civil Defense may not realize the urgency of completing their local plans. Nevertheless, it is a fact that all the billions spent for defense will be of no value if the civilian population, the key to production, is not warned in time for survival.

Expenditures for jet intercepters are spent gladly. Do you realize that for a fraction of the cost of *one* such fighter, your community can be protected with complete and adequate air raid warning equipment?

It is not only logical, but it is as urgent as defense armaments themselves! You *can* do something about it. But don't waste your time looking for the loudest and most powerful signal. One large signal cannot completely blanket an area regardless of its output. It is only by a combination of powerful signals like the Federal Thunderbolt and the satisfactory distribution of smaller sirens that complete blanket coverage can be achieved.

A thorough and even blanket distribution of sound is more important than excessive intensity at any one point. Only by the strategic location of 2 HP and larger sirens can a completely successful system be attained. Federal fractional horsepower sirens up through the 2, 5 and 7½ HP models to the Thunderbolt are most economical in first cost, require no maintenance and produce maximum sound per horsepower. Such signals afford the greatest reliability, respond most dependably to centralized control and can be installed with a minimum of material and labor.

Write for our air raid bulletin today.

THUNDERBOLT NO. 2 MODEL 7

FEDERAL ENTERPRISES, Inc.

Formerly Federal Electric Company, Inc.

8756 S. STATE ST. • CHICAGO 19, ILL.

(*Continued from page* 162)

owner-operator of a locker plant in Newnan, Ga.

The results indicate that in Georgia the community-locker kitchen can be used for processing lima beans, field peas, corn, peaches, apples, strawberries, blueberries, and grapes.

In the experimental plant, all work is done by employed personnel at processing charges which include container and freezing for vegetables, and container, freezing, and sugar for fruit. These were set at 50 cents a dozen ears for corn; $1 per bushel for peas and beans; 15 cents a quart for strawberries; 19 cents a pound for blueberries; $2 a bushel for peaches, and $3 a bushel for apples. The plant, with its new equipment costing about $3,000, has become a processing center for the whole community. Even families who own home freezing units turn to the operators for advice on processing methods. In turn they have become good customers for cartons, freezer paper, and other accessories which are a profitable sideline at the plant.

Travel Log of Ordinance

This is one of the many illustrations from the excellent 1951-52 report published by the City of Cleveland, Ohio. The comprehensive annual report, the first Cleveland has issued for many years, was prepared under the supervision of Thad Fusco, City and Council Clerk, who had a background of three years as a councilman before he became clerk in January 1950. Herman Bonchek, Information Chief, did the production job.

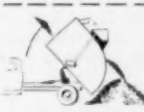
for lowest net cost per yard

REFUSE HANDLING

Lowest first cost, plus ability to utilize lighter, less expensive trucks, makes PAX-ALL the most economical method of refuse disposal available today. *One PAX-ALL Automatic Loader does the work of 2 to 3 open trucks* because PAX-ALL's exclusive cram-packing compacts garbage and loose trash into less bulk for bigger loads, fewer trips — with less labor, less gasoline. In addition, PAX-ALL gives you a more sanitary service because enclosed, leakproof PAX-ALL body eliminates dripping, offensive odors, etc. Learn all about PAX-ALL today!

1. EASY LOADING
Operators empty refuse into big ¾-yd. bucket which dumps through hatch at top of body.

2. CRAM-PACKING
As load enters hatch, packing panel compresses refuse toward rear for max. compaction.



3. CLEAN-DUMPING
Dash or rear control hoists body to 53° angle and opens tail gate for clean dump.

If your city has a budget for Refuse Disposal you can afford PAX-ALL! *Act now!*

St. Paul HYDRAULIC HOIST
Customer Service Dept.
36125 Main St., Wayne, Mich.

☐ Send details on PAX-ALL Refuse Loader

Name _____
Title _____
Address _____ State _____
City _____

S-PC-1

St. Paul HYDRAULIC

Fort Wayne

FACTS SHOW THREE BIG REASONS FOR USING

TROLLEY COACHES

78 trolley coaches with more than 25 million miles of service . . . maintained for 3.51 cents per mile in 1950, for 4.22 cents during the first 11 months of 1951 . . . 1940 coaches coming in for their first brake lining renewal . . . only two armatures replaced on 78 vehicles in 12 years . . . 1940 coaches looking just as good as those half as old . . . stored outdoors in all kinds of weather . . . more than 10,000 miles of service for every road failure . . . and a profit every year for 12 years.

These are the facts behind the story of trolley coach operation at Fort Wayne Transit, Inc. -- facts that emphasize three important features of modern trolley coach operation.

1. LONG SERVICE LIFE — They not only serve longer than any other vehicle, they also retain their attractiveness while they do it. Today in Fort Wayne it takes an expert to tell the difference between a 1940 trolley coach and one bought in 1946. Both look good, although the 1940 coach is twice as old.

2. LOW COST OF MAINTENANCE — Easier braking, fewer wearing parts; electric motors with all the endurance of streetcar motors plus the quick, smooth power of modern trolley coach operation. These features mean better mechanical performance and less time for maintenance.

3. RIDER APPEAL — Without this advantage, all others become meaningless. In today's struggle to hold the rider, an attractive, comfortable riding vehicle becomes essential. Fort Wayne Transit has continuing proof of the popularity of its trolley coaches. When other transit vehicles are substituted temporarily on a line, Fort Wayne riders immediately question operators with "when will we get the electric coaches back?"

Ohio Brass

MANSFIELD OHIO, U. S. A.

LINE MATERIAL
CAR EQUIPMENT
FOR TROLLEY COACHES
AND STREETCARS

Canadian Ohio Brass Co., Ltd., Niagara Falls, Ont.

4274-T

Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*

Russell J. Cooney
Merced, Calif.

William L. Kell
Bluefield, W. Va.

Bert W. Fulford
Gainesville, Ga.

Roger Lord
Trois Rivieres, Que.

Fernand Bourassa
La Tuque, Que.

RONALD W. CLIFFORD, former city manager of Milbridge, Maine, succeeds Walter R. Benson as city manager of Lincoln, Maine.

Halifax, Nova Scotia, has appointed AUGUST A. DEBARD as its first city manager. Mr. DeBard was the Finance Director at Milford, Conn.

Konowa, Okla., has appointed A. F. EMSON to the city manager position vacated by Jasper N. Freeman.

RAY FRY succeeds John M. Biery as city manager of Midland, Mich. Mr. Fry was previously the City Engineer, Director of Public Works, and Assistant City Manager at Jackson, Mich.

C. LELAND GUNN, city manager of Buchanan, Mich., has been appointed by Bakersfield, Calif., to fill the city manager position vacated by Carl Thornton.

Beeville, Texas, has appointed DOUGLAS HENSLEE, former Budget Officer at Waco, Texas, as its first city manager.

W. LEO HILL, Administrative Assistant at Pueblo, Colo., has been appointed city manager of Columbia, Mo., the position previously held by C. E. Perkins.

JULIAN F. HURT, former manager of Pearisburg, Va., succeeds E. A. Beck as Town Manager of Pulaski, Va.

Granite Falls, Minn., appointed ORVIL J. JOHNSON as its first city manager. Mr. Johnson was formerly employed as electrical engineer at Watertown, S. Dak.

ROBERT G. KYLE, former City Engineer at North Bend, Ore., succeeds C. G. Reiter at Coos Bay, Ore.

Stockton, Calif., has appointed RUSSELL C. MCGEE to succeed Raymond V. Carey as city manager. Mr. McGee was acting city manager at Stockton.

C. E. PERKINS, former city manager of Columbia, Mo., succeeds Charles B. Briley as city manager of Glendale, Calif.

CLARENCE E. RIDLEY, *Director*
International City Managers' Association

How Far Should Sidewalks Be from the Street?

SIDEWALKS should be at least 3 feet from the curb if there are no trees between the sidewalk and the curb. If there are trees, the distance should be at least 7 feet.

These are the instructions from the National Committee for Traffic Safety, as stated in the Traffic Engineering Handbook (1950). Some city officials in the snow-belt area recommend a greater distance than 3 feet.

Selected Municipal Bond Sales, February 28 to March 11

Date of Sale		*Amount*	*Purpose*	*Average Maturity (Years)*	*Net Interest Cost Per Cent*
2-28	Euclid, Ohio	$ 450,000	Sewer	11-1/4	2.27
3- 3	Bloomfield, N. J.	1,463,000	School and Gen. Imp.	18-1/6	1.972
3- 4	Catawba Co., N. C.	1,250,000	School	15-5/6	2.0927
3- 4	Minneapolis, Minn.	3,350,000	Various	9-1/2	1.8108
3-10	Metropolitan Sewerage Area, Milwaukee County, Wis.	1,300,000	Sewer	4	1.2162
3-10	Tarrant Co., Texas	500,000	Road	3	1.2917
3-11	Cookeville, Tenn.	600,000	Sewer	17-1/4	3.084
3-11	Faribault, Minn.	225,000	General	7-3/4	1.433
3-11	Knoxville, Tenn.	400,000	Gas Rev.	11-1/6	2.0827
3-11	Pittsburg, Calif.	1,550,000	Impr'vment	15-1/2	2.0179
3-11	Raleigh, N. C.	2,540,000	Water and Fire Sts.	23-1/4	2.17

Passengers Should Face The Rear for Plane Safety

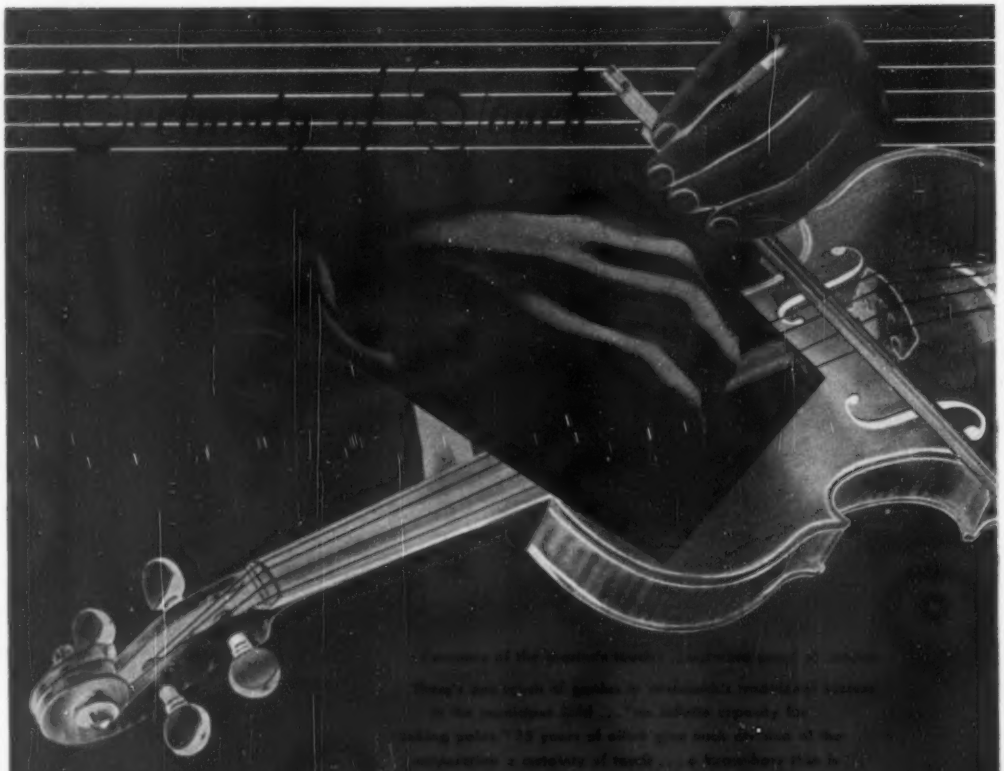
A YALE DOCTOR urges that airlines install stronger safety belts and have all passenger seats face the rear to decrease the casualties of air crashes.

Dr. John F. Fulton, active in aviation research at the Yale School of Medicine, states that the value of such improvements to passenger seating has been proved in laboratory experiments and by investigations of actual crashes.

Stronger safety belts keep a passenger from striking his head on the seat ahead of him as well as prevent him from being tossed about the interior of the plane. The passenger would also get extra protection if the seat faced the rear and thus would not be thrown forward when the plane crash-landed.

He has found that many rear gunners on military aircraft supported such measures. When a heavy bomber crashed into a hillside, it was not uncommon for everyone in the plane to be killed instantly, save the rear gunner who, in several authentic instances, slipped out of the debris shaken but uninjured. First, the gunner's head and body were supported by solid structure at the time of the impact, and, second, the gunner was riding backwards.

In addition to strengthening the safety belts, Dr. Fulton recommended that airliner seats themselves be anchored to the fuselage more firmly than they are at the present time. He also advised that padding should be put on the top of the seats to protect the head of a passenger who might be thrown violently forward against the seat in the event of a crash.



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Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

April 11-12—Billings, Mont.
AMERICAN WATER WORKS ASSOCIATION—Montana Section. Annual Meeting (Northern Hotel). Sec., Arthur W. Clarkson, Asst. Dir., Division of Sanitary Engineering, State Board of Health, Helena, Mont.

April 14-17—Lafayette, Ind.
PURDUE ROAD SCHOOL. Annual Meeting (Union Bldg., Purdue University). Exec. Sec., Ben H. Petty, C. E. Bldg., Purdue University, Lafayette, Ind.

April 16-18—Syracuse, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Spring Meeting (Hotel Syracuse). Sec., R. K. Blanchard, 50 West 50th St., New York, N. Y.

April 17-18—Lincoln, Nebr.
AMERICAN WATER WORKS ASSOCIATION—Nebraska Section. Annual Meeting (Cornhusker Hotel). Sec., E. Bruce Meier, Asst. Professor, University of Nebraska, Lincoln, Nebr.

April 17-18—Washington, D. C.
MARYLAND-DELAWARE WATER AND SEWERAGE ASSOCIATION. Annual Meeting (Wardman Park Hotel). Sec.-Treas., W. McLean Bingley, 2411 N. Charles St., Baltimore 18, Md.

April 24-26—Baltimore, Md.
AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (Lord Baltimore Hotel). Exec. Sec., Mrs. Ruth Bullerwell, Room 5-406A, 77 Massachusetts Ave., Cambridge 39, Mass.

April 24-26—Spokane, Wash.
AMERICAN WATER WORKS ASSOCIATION—Pacific Northwest Section. Annual Meeting (Davenport Hotel). Sec., O. P. Newman, Box 548, Boise, Idaho.

April 29-May 1—Seattle, Wash.
AMERICAN PUBLIC POWER ASSOCIATION Annual Meeting (Olympic Hotel). Gen. Mgr., Alex Radin, 1757 K St., Washington 6, D. C.

May 3—Kansas City, Kans.
AMERICAN WATER WORKS ASSOCIATION—Kansas Section. Annual Business Meeting (Town House). Sec.-Treas., Harry W. Badley, 640 Highland St., Salina, Kans.

May 4-9—Kansas City, Mo.
AMERICAN WATER WORKS ASSOCIATION. Annual Conference (Municipal Auditorium). Sec., Harry E. Jordan, 521 Fifth Ave., New York 17, N. .

May 5-6—Washington, D. C.
NATIONAL HOUSING CONFERENCE. Annual Meeting (Hotel Statler). Exec. Vice-Pres., Lee F. Johnson, 1025 Vermont Ave., NW., Washington, D. C.

***May 5-8—Chicago, Ill.**
GREATER CHICAGO SAFETY COUNCIL. Annual Midwest Safety Show (Congress Hotel). Mgr., Joseph F. Stech, 10 N. Clark St., Chicago 2, Ill.

May 6—Kansas City, Mo.
AMERICAN WATER WORKS ASSOCIATION—Kansas Section. Business Meeting-Luncheon (Hotel President). Sec., H. W. Badley, 640 Highland St., Salina, Kans.

May 6—Kansas City, Mo.
AMERICAN WATER WORKS ASSOCIATION—Missouri Section. Business Meeting-Luncheon (Hotel President). Sec., W. A. Kramer, Division of Health, State Office Bldg., Jefferson City, Mo.

May 7-9—West Lafayette, Ind.
INDUSTRIAL WASTE UTILIZATION CONFERENCE. Annual Meeting (Purdue Memorial Union). Exec. Sec., Don E. Bloodgood, Department of Engineering, Purdue University, Lafayette, Ind.

***May 9—New Brunswick, N. J.**
STATE CONFERENCE ON PLANNING AND DEVELOPMENT. Annual Conference (University Commons, Rutgers University). For details write to the State Planning Section, 520 E. State St., Trenton 7, N. J.

May 15-17—Lewiston, Idaho
IDAHO MUNICIPAL LEAGUE. Annual Meeting (Lewis and Clark Hotel). Exec. Sec., R. W. Smith, Box 787, Weiser, Idaho.

May 15-17—New York, N. Y.
THE UNITED STATES CONFERENTE OF MAYORS. Twentieth Anniversary Conference (The Waldorf-Astoria). Exec. Dir., Paul V. Betters, 730 Jackson Pl., NW., Washington 6, D. C.

***May 18-21—Louisville, Ky.**
NATIONAL CITIZENS CONFERENCE ON PLANNING AND RESOURCES. Annual Meeting (Brown Hotel). Conference Chrmn., Kenneth P. Vinsel, Louisville Chamber of Commerce, 3rd and Liberty Sts., Louisville, Ky.

***May 20-21—Gainesville, Fla.**
NATIONAL PUBLIC HEALTH ENGINEERING CONFERENCE. Annual Meeting (Student Service Center). Dr. David B. Smith, Dept. of Civil Engineering, University of Florida, Gainesville, Fla.

May 21-23—Dallas, Texas
NATIONAL INSTITUTE OF MUNICIPAL CLERKS. Annual Meeting (Hotel Baker). Pres., Arthur J. Shinners, Town Hall, Brookline, Mass.

May 22-23—Waterbury, Conn.
NEW ENGLAND SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Hotel Elton). Sec.-Treas., Walter E. Merrill, 511A State House, Boston 33, Mass.

***May 26-28—Montreal, Que.**
AMERICAN WATER WORKS ASSOCIATION—Canadian Section. Annual Meeting (Mount Royal Hotel). Sec., A. E. Berry, Director of Sanitary Engineering, Parliament Bldgs., Toronto 2, Ont.

***May 28-29—Atlantic City, N. J.**
AMERICAN SHORE AND BEACH PRESERVATION ASSOCIATION. Annual Meeting (Chalfonte-Haddon Hall). Sec.-Treas., Peter J. Gannon, 1060 Broad St., Newark 2, N. J.

***June 6-7—Yakima, Wash.**
ASSOCIATION OF WASHINGTON CITIES. Annual Convention (Chinook Hotel)). Exec. Sec., Chester Biesen, 250 Smith Hall, University of Washington, Seattle 5, Wash.

June 8-10—Bedford, Pa.
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Meeting (Bedford Springs Hotel). Sec.-Treas., H. A. Fritschman, 2325 Darby Rd., Havertown, Pa.

June 8-11—Asheville, N. C.
NATIONAL ASSOCIATION OF TAX ADMINISTRATORS. Annual Meeting (Grove Park Inn). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago 37, Ill.

June 9-12—Cleveland, Ohio
AIR POLLUTION AND SMOKE PREVENTION ASSOCIATION OF AMERICA. Annual Meeting (Hotel Statler). H. G. Dyktor, Commissioner, Division of Air Pollution Control, 1404 E. 9th St., Cleveland 14, Ohio.

June 9-13—New York, N. Y.
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Meeting (Hotel Statler). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston, Mass.

June 15-18—Minneapolis, Minn.
ASSOCIATION OF STATE PLANNING AND DEVELOPMENT AGENCIES. Annual Conference (Nicollet Hotel). Exec. Dir., Walter H. Bluemer, 1313 E. 60th St., Chicago 37, Ill.

June 15-18—San Antonio, Texas
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Meeting (Plaza Hotel). Sec., Keith L. Seegmiller, 1616 Eye St., NW., Washington, D. C.

June 15-19—Boston, Mass.
MUNICIPAL FINANCE OFFICERS' ASSOCIATION OF THE UNITED STATES AND CANADA. Annual Conference (Statler Hotel). Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chicago 37, Ill.

***June 18-20—Erie, Pa.**
AMERICAN WATER WORKS ASSOCIATION—Pennsylvania Section. Annual Meeting (Lawrence Hotel). Sec., L. S. Morgan, Division of Engineering, State Department of Health, Greensburg, Pa.

***June 23-24—Portland, Ore.**
NATIONAL BUSINESSMEN'S CONFERENCE ON URBAN PROBLEMS. Annual Conference. For details write to the Chamber of Commerce of the United States, Washington, D. C.

June 23-27—New York, N. Y.
AMERICAN SOCIETY FOR TESTING MATERIALS. 50th Anniversary Meeting (Hotels New Yorker and Statler). Asst. Sec., Robert J. Painter, American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

June 24-27—New York, N. Y.
THE AMERICAN INSTITUTE OF ARCHITECTS. Annual Convention (Waldorf-Astoria Hotel). Exec. Dir., Edmund R. Purves, 1741 New York Ave., NW., Washington 6, D. C.

***June 25-28—Cazenovia, N. Y.**
THE NEW YORK STATE CITIZENS COUNCIL. Eighth Annual Institute of Community Leadership (Casenovia Junior College). Institute Dir., Dorothy J. Mial, 613 E. Genesee St., Syracuse 2, N. Y.

July 28-30—Pittsburgh, Pa.
PENNSYLVANIA CHIEFS OF POLICE ASSOCIATION. Annual Meeting (William Penn Hotel). Exec. Dir., Samuel Siegle, 420 State Theatre Bldg., Harrisburg, Pa.

June 30-July 2—Calgary, Alberta
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Conference (Palliser Hotel). Exec. Dir., George S. Mooney, Office M-17, Mount Royal Hotel, Montreal, Que.

Aug. 18-22—Boston, Mass.
NATIONAL SHADE TREE CONFERENCE. Annual Convention (Hotel Statler). Sec.-Treas., L. C. Chadwick, Dept. of Horticulture, Ohio State University, Columbus, Ohio.

Aug. 24-27—Los Angeles, Calif.
AMERICAN PUBLIC WORKS ASSOCIATION. Congress and Equipment Show, Shrine Convention Hall and the Ambassador Hotel. Exec. Dir., D. F. Herrick, 1313 E. 60th St., Chicago 37, Ill.

Aug. 25-27—State College, Pa.
PENNSYLVANIA WATER WORKS OPERATORS' ASSOCIATION. 25th Anniversary Meeting (Union Bldg.) Sec.-Treas., R. R. Kountz, Department of Civil Engineering, Pennsylvania State College, State College, Pa.

Aug. 25-28—Boston, Mass.
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Meeting (Hotel Statler). Gen. Mgr., James E. Jagger, 22 E. 38th St., New York 16, N. Y.

Aug. 27-29—State College, Pa.
PENNSYLVANIA SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting Pennsylvania State College). Sec.-Treas., Bernard S. Bush, Kirby Health Center, Wilkes-Barre, Pa.

***Sept. 7-8—Dickinson, N. D.**
LEAGUE OF NORTH DAKOTA MUNICIPALITIES. Annual Convention (Ray Hotel). Exec. Sec., Myron H. Atkinson, Bismarck, N. D.

(Continued on page 171)

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Scott Air-Pak* Scott Inhalator*

* Scott Air-Pak uses pure air (not oxygen) for fighting fires or rescuing victims.

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"Emergency call from the watch desk — Rescue squad needed — man overcome. Minutes later he was feeling better, revived with our Scott Demand Inhalator. Makes you feel good to help folks like this.

"These efficient, portable oxygen units are wonderful for emergency service. Victims get 100% concentration — comfortably — thanks to the demand feature. We can also provide constant flow by pressing a button. The demand feature is fully automatic and cuts down training time."

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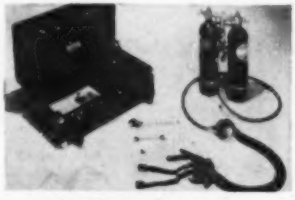

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Phony Sales Braked

THROUGH a village ordinance, Rockville Centre, N. Y., took action in February to halt the often phony sales of merchants who plaster their windows with "Going Out of Business" signs.

There were so many fake sales of this nature that the local Chamber of Commerce complained and asked for an ordinance. The new law requires that a license be issued for such sales, posting of an inventory, police protection, and fines from $25 for the first offenders to $100 for succeeding offenses be levied against merchants who persist in the practice.

An ordinance with somewhat similar objectives, dealing with "truth in advertising," was recently adopted by the City Council of Miami Beach, Fla., at the request of the Chamber of Commerce.

Indian Ruins Cost Phoenix $14,000 Yearly

PHOENIX, ARIZ., has one item in its annual budget that is probably unique. It is a sum of $14,119 "for prehistoric ruins." Phoenix reportedly is the only city in the country that maintains such a monument. Called Pueblo Grande, it is the ruins of a village and community granary used by Indians about 700 A.D.

To preserve, develop, and interpret the history of the ruins and its lost civilization, Phoenix employs the only man to hold a civil service rating as a city archeologist, Odd S. Halseth.

Although there are no direct financial returns from the ruins, the Chamber of Commerce figures that in tourist dollars they are worth from $50,000 to $75,000 yearly.

Fence-Viewing Duties

THE SUBJECT of "fence viewing" is very much alive. This is the theme of an article by John C. Hinkle, Senior Attorney, New York Department of Audit and Control, which appears in *Assessors Topics*, a bulletin for Town Assessors, published by The Association of Towns, 91 State St., Albany, N. Y.

The article describes the powers and duties of fence viewers in New York State, and points out that a number of recent cases have been concerned with fence-viewing activities. In this state, town assessors are fence viewers. If a town has only one assessor plus a board of review, the members of the board of review act as the fence viewers.

What do fence viewers do? In general they aid in determining the value of fences jointly maintained, and apportionment of costs for liabilities or damages for cases involving fences and their upkeep.

(Continued from page 169)

Sept. 8-10—Groton, Conn.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Convention (Hotel Griswold). Sec., Joseph C. Knox, 73 Tremont St., Boston 8, Mass.

***Sept. 8-10—Philadelphia, Pa.**
PENNSYLVANIA STATE ASSOCIATION OF COUNTY COMMISSIONERS. Annual Convention. Sec.-Treas., Herbert S. Bolger, Court House, Hollidaysburg, Pa.

***Sept. 8-11—Chicago, Ill.**
INSTITUTE OF TRAFFIC ENGINEERS. Annual Convention (Hotel Sherman). Exec. Sec., Fred W. Hurd, 211 Strathcona Hall, New Haven, Conn.

Sept. 8-12—Chicago, Ill.
ILLUMINATING ENGINEERS SOCIETY. National Technical Conference (Edgewater Beach Hotel). Exec. Sec., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

***Sept. 9-11—Grinnell, Iowa**
IOWA SEWAGE WORKS ASSOCIATION. Annual Meeting (Grinnell College). Sec.-Treas., Leo Hultkamp, P. O. Box 310, Webster City, Iowa.

***Sept. 10-12—Sioux Falls, S. D.**
AMERICAN WATER WORKS ASSOCIATION—Minnesota Section. Annual Meeting. Sec.-Treas., Leonard N. Thompson, 216 Court House Bldg., St. Paul 2, Minn.

Sept. 10-12—Shawnee-on-Delaware, Pa.
GOVERNMENTAL RESEARCH ASSOCIATION. Annual Meeting (Shawnee Inn). Sec., Louis D. Brown, 30 Rockefeller Plaza, New York 20, N. Y.

***Sept. 10-13—Salt Lake City, Utah**
UTAH MUNICIPAL LEAGUE. Annual Meeting (Newhouse Hotel). Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

Sept. 14-16—Old Point Comfort, Va.
LEAGUE OF VIRGINIA MUNICIPALITIES. Annual Meeting (Chamberlin Hotel). Exec. Sec., H. I. Baumes, 905 Travelers Bldg., Richmond 19, Va.

***Sept. 15-17—Reading, Pa.**
MUNICIPAL AUTHORITIES. Annual Conference sponsored by the Pennsylvania Municipal Authorities Association (Abraham Lincoln Hotel). Sec.-Treas., Claude C. Fogelman, 1717 Main St., Northampton, Pa.

***Sept. 15-18—Montreal, Que.**
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Meeting. Exec. Sec., Weldon B. Wade, 30 N. LaSalle St., Chicago 2, Ill.

Sept. 16-17—Cheyenne, Wyo.
AMERICAN WATER WORKS ASSOCIATION—Rocky Mountain Section. Annual Meeting (Frontier Hotel). Exec. Sec., George J. Turre, Board of Water Commission, Box 600, Denver, Colo.

***Sept. 16-18—Madison, Wis.**
AMERICAN WATER WORKS ASSOCIATION—Wisconsin Section. Annual Meeting (Loraine Hotel). Sec.-Treas., Leon A. Smith, City Hall, Madison 3, Wis.

Sept. 17-19—Huron, S. D.
SOUTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE. Annual Meeting (Marvin Hughitt Hotel). Exec. Sec., Charles E. Carl, Director of the Division of Engineering, State Department of Health., Pierre, S. D.

Sept. 20-25—Atlantic City, N. J.
AMERICAN TRANSIT ASSOCIATION. Annual Meeting (Traymore Hotel). Gen. Sec., A. W. Baker, 292 Madison Ave., New York, N. Y.

***Sept. 21-23—Alliance, Nebr.**
LEAGUE OF NEBRASKA MUNICIPALITIES. Annual Meeting (Drake Hotel). Exec. Sec.-Treas., C. E. Beals, 407 Continental Bldg., Lincoln, Nebr.

Sept. 21-23—Jefferson City, Mo.
MISSOURI WATER AND SEWAGE CONFERENCE. Annual Meeting (Hotel Governor). Sec.-Treas., W. A. Kramer, State Office Bldg., Jefferson City, Mo.

Sept. 21-25—Los Angeles, Calif.
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Conference (Biltmore Hotel). Exec. Sec., Edward J. Kelly, 1424 K St., NW., Washington 5, D. C.

Sept. 22-23—Wichita, Kans.
LEAGUE OF KANSAS MUNICIPALITIES. Annual Meeting (Hotel Broadview). Exec. Dir., John G. Stutz, 512 Capitol Federal Bldg., Topeka, Kans.

Sept. 22-24—Detroit, Mich.
NATIONAL ASSOCIATION OF ASSESSING OFFICERS. Annual Meeting (Hotel Statler). Exec. Dir., Albert W. Noonan, NAAO, 1313 E. 60th St., Chicago 37, Ill.

Sept. 24-26—Battle Creek, Mich.
AMERICAN WATER WORKS ASSOCIATION—Michigan Section. Annual Meeting (Post Tavern). Exec. Dir., T. L. Vander Velde, Water Supply Section, Michigan Department of Health, Lansing 4, Mich.

Sept. 24-26—Grand Rapids, Mich.
MICHIGAN MUNICIPAL LEAGUE. Annual Meeting (Pantlind Hotel). Exec. Dir., John H. Huss, 205 S. State St., Ann Arbor, Mich.

Sept. 29-Oct. 3—Seattle, Wash.
NATIONAL RECREATION ASSOCIATION. Annual Congress. Sec., T. E. Rivers, 315 Fourth Ave., New York 10, N. Y.

Oct. 1-2—Des Moines, Iowa
LEAGUE OF IOWA MUNICIPALITIES. Annual Meeting (Fort Des Moines). Exec. Sec.-Treas., Max A. Conrad, 301-04 Tama Bldg., Burlington, Iowa.

***Oct. 5-9—Boston, Mass.**
AMERICAN SOCIETY OF PLANNING OFFICIALS. National Planning Conference (Copley-Plaza). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

***Oct. 6-9—New York, N. Y.**
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Hotel Statler). Exec. Sec.-Editor, W. H. Wisely, 325 Illinois Bldg., Champaign, Ill.

Oct. 12-14—Springfield, Ill.
ILLINOIS MUNICIPAL LEAGUE. Annual Meeting (Leland Hotel). Exec. Dir., A. L. Sargent, 537 S. Fourth St., Peoria, Ill.

***Oct. 12-15—Tulsa, Okla.**
AMERICAN WATER WORKS ASSOCIATION—Southwest Section. Annual Convention (Mayo Hotel). Sec.-Treas., Leslie A. Jackson, care of Water Department, Little Rock, Ark.

***Oct. 13-15—Easton, Pa.**
PENNSYLVANIA LEAGUE OF THIRD CLASS CITIES. Annual Convention (Hotel Easton). Exec. Dir., Walter E. Greenwood, City Hall, Harrisburg, Pa.

Oct. 13-15—San Diego, Calif.
LEAGUE OF CALIFORNIA CITIES. Annual Convention. Exec. Dir., Richard Graves, Hotel Claremont Bldg., Berkeley 5, Calif.

Oct. 14-17—Atlantic City, N. J.
PENNSYLVANIA WATER WORKS ASSOCIATION. Annual Meeting (Chalfonte-Haddon Hall). Sec.-Treas., W. A. Kuffs, care of American Water Works Service Co., 928 N. Third St., Harrisburg, Pa.

***Oct. 14-17—Buffalo, N. Y.**
NATIONAL ASSOCIATION OF HOUSING OFFICIALS. Annual Meeting (Statler Hotel). Exec. Dir., John D. Lange, 1313 E. 60th St., Chicago 37, Ill.

Oct. 16-17—Green Bay, Wis.
LEAGUE OF WISCONSIN MUNICIPALITIES. Annual Convention (Hotel Northland). Exec. Sec., Frederick N. MacMillan, 30 E. Johnson St., Madison 3, Wis.

Oct. 19-22—Chicago, Ill.
NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference and Products Exhibit (Edgewater Beach Hotel). Exec. Dir., Albert H. Hall, 730 Jackson Pl. NW., Washington 6, D. C.

***Oct. 19-21—Wichita, Kans.**
KANSAS ASSOCIATION OF MUNICIPAL UTILITIES. Annual Convention (Broadview Hotel). Exec. Sec., E. P. Showalter, Director of Industrial Relations, Board of Public Utilities, City Hall, Kansas City 16, Kans.

***Oct. 20-22—Pittsburgh, Pa.**
ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA. Annual Water Conference (Hotel William Penn). Sec., William Porter, William Penn Hotel, Pittsburgh 30, Pa.

***Oct. 20-23—New York, N. Y.**
CIVIL SERVICE ASSEMBLY OF THE UNITED STATES AND CANADA. Annual Convention (Hotel New Yorker). Exec. Dir., Kenneth O. Warner, 1313 E. 60th St., Chicago 37, Ill.

***Oct. 20-24—Chicago, Ill.**
NATIONAL SAFETY CONGRESS AND EXPOSITION. Annual Meeting (Conrad Hilton Hotel). Exec. Sec., R. L. Forney, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

***Oct. 20-24—Cleveland, Ohio**
AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Meeting (Public Auditorium). Exec. Sec., Reginald M. Atwater, M. D., 1790 Broadway, New York 19, N.Y.

***Oct. 23-25—Atlantic City, N. J.**
AMERICAN WATER WORKS ASSOCIATION—New Jersey Section. Annual Meeting (Hotel Madison). Exec. Sec., C. B. Tygert, Box 178, Newark, N. J.

Oct. 23-25—Rockford, Ill.
ILLINOIS ASSOCIATION OF PARK DISTRICTS. Annual Meeting (Hotel Faust). Exec. Sec., Marjorie M. Dickinson, 401½ E. Capitol, Springfield, Ill.

***Oct. 29-31—Pasadena, Calif.**
AMERICAN WATER WORKS ASSOCIATION—California Section. Annual Meeting (Huntington Hotel). Sec., John C. Luthin, Monterey Bay Water Company, 1113 Laurent St., Santa Cruz, Calif.

***Oct. 30-31—Washington, D. C.**
AMERICAN WATER WORKS ASSOCIATION—Chesapeake Section. Annual Meeting (Wardman Park Hotel). Exec. Sec., Carl J. Lauter, 6955 33rd St., Washington 15, D. C.

***Nov. 3-5—Montebello, Que.**
CANADIAN INSTITUTE OF SEWAGE AND SANITATION. Annual Meeting (Seigniory Club). Sec.-Treas., Dr. A. E. Berry, Parliament Bldgs., Toronto, Antario, Canada.

Nov. 9-11—Raleigh, N. C.
NORTH CAROLINA LEAGUE OF MUNICIPALITIES. Annual Meeting (Sir Walter Hotel). Exec. Sec., Davetta L. Steed, 1009 Raleigh Bldg., Raleigh.

***Nov. 10-12—Hendersonville, N. C.**
AMERICAN WATER WORKS ASSOCIATION—North Carolina Section. Annual Meeting (Skyland Hotel). Sec.-Treas., E. C. Hubbard, State Board of Health, Raleigh, N. C.

***Nov. 14-15—Charleston, W. Va.**
WEST VIRGINIA LEAGUE OF MUNICIPALITIES. Annual Meeting (Daniel Boone Hotel). Exec. Sec., Pat E. Maloney, P. O. Box 3141, Charleston, W. Va.

***Nov. 16-19—Dallas, Texas**
LEAGUE OF TEXAS MUNICIPALITIES with eight affiliated organizations. Annual Convention. Exec. Dir., E. E. McAdams, 108 E. 19th St., Austin, Texas.

***Nov. 18-21—Atlantic City, N. J.**
NEW JERSEY STATE LEAGUE OF MUNICIPALITIES. Annual Meeting (Chalfonte-Haddon Hall). Exec. Dir., James J. Smith, 603 Trenton Trust Bldg., Trenton, N. J.

***Nov. 20-22—Portland, Ore.**
LEAGUE OF OREGON CITIES. Annual Meeting (Hotel Multnomah). Exec. Sec., Herman Kehrli, Johnson Hall, University of Oregon, Eugene, Ore.

NOTES

for the engineer's note book

—ON—

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UP TO 90,000 GPM CLEAR WATER CAPACITY

with Wheeler-Economy Horizontally-Split Case Double-Suction Centrifugal Pumps

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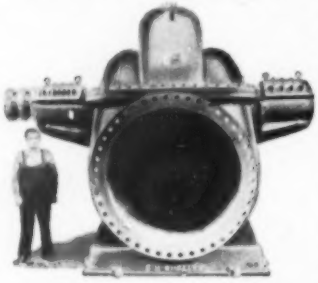
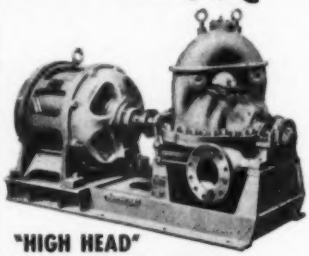


Single stage, double suction, split case design in sizes from 1½" to 54". For detailed features, see CATALOG A750.



"HIGH HEAD" IN A COMPACT PUMP

Two Stage Type DMD

Heavy duty, high efficiency with opposed impellers and horizontally split case. Sizes 2" to 10" for capacities to 4,000 GPM and heads to 750 feet. Wheeler-Economy DMD Pumps are used in high head water works applications, buildings, hydraulic elevators, boiler feeding, mines, etc. See CATALOG C351.

FOR SEWAGE MEN:

UNSCREENED SEWAGE HANDLED By Wheeler-Economy Non-Clog Centrifugal Pumps

For DRY PIT installations:

Wheeler-Economy Horizontal or Vertical Centrifugal Sewage Pumps have clear waterways from 1½" to 10". They pump unscreened sewage, miscellaneous pulp or trash in liquid without difficulty. Where sewage is screened, Mixed Flow types are available for higher speed, more economical operation. Sizes to 36".

"Sentry" Type vertical pump with motor direct connected. For dry pit service, not subject to flooding, and to conserve floor space. CATALOG F249.

Horizontal Type for economical installation, accessibility and to simplify maintenance. CATALOG F447.

Open Shaft Type vertical pump with flexible shafting drive from motor. Motor located at distance above pump to avoid possible flooding of electrical equipment and to conserve pump room floor space. CATALOG F249.

For WET PIT installations:

WHEELER-ECONOMY Sump Pumps

Designed in single or duplex units to elevate drainage or sewage from wet pits, sumps, basements, boiler pits, scale and elevator pits, etc. Sizes from 1½" to 3" for drainage free from solids. Sizes 3" to 14", non-clog type for unscreened drainage containing solids. Sump cover and control arrangements can be supplied to meet any requirements. CATALOG E748 for General Service. CATALOG E345 for Non-Clog.

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WHEELER-ECONOMY PUMPS

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19TH AND LEHIGH, PHILADELPHIA 32, PA.

Municipal & Civic Publications

Redevelopment Program Summaries

SUMMARIES OF LOCAL REDEVELOPMENT PROGRAMS, SERIES II.—*Division of Slum Clearance and Urban Redevelopment, Office of the Administrator, Housing and Home Finance Agency, Washington, D. C. February* 1952. 22 *pp.*

These summaries cover the cities of Montgomery, Ala.; Shelton, Conn.; San Juan, Mayaguez, and Ponce, Puerto Rico; New Orleans; San Francisco; Danville, Ill.; Little Rock, Ark., and Dover, N. H. They provide a brief, factual picture of slum-clearance and urban-redevelopment programs contemplated or under way in some of the cities and towns in continental United States and its territories. All of the localities are participating in the Federally-assisted program of slum clearance and urban redevelopment authorized by Title I of the Housing Act of 1949.

Street Naming, Property Numbering Techniques

A GUIDE TO STREET NAMING AND PROPERTY NUMBERING—*Published by the Tennessee State Planning Commission, 157 Commerce Street, Nashville 3, Tenn. Nov* 1951. 47 *pp.* $1.

This guide presents basic principles underlying a systematic house-numbering and street-naming system. It is written primarily for the technician's use; however, planning commissions and city officials will find it useful background, particularly if street-naming and property-numbering reform is contemplated. The booklet, in addition to discussing various systems of street naming and property numbering, gives advice on putting the plan into operation, and in the Appendix gives samples of types of ordinances to be used.

New York City's Parks

EIGHTEEN YEARS OF PROGRESS—*By the Park Department and the City of New York, The Park Department, Arsenal, Central Park, New York, N. Y. March* 1952. 48 *pp.*

This report to the Mayor and the Board of Estimate records the status and future plans of the park system as of March 1952. It contains numerous photographs of parks, playgrounds, beaches, parkways, etc., and a map and chart indicating the great strides that have been made in New York City since 1934 in securing additional land and in increasing facilities. Interior recreation centers, museums and institutions, end of pollution at beaches, expanded golf and tennis facilities, standards of design, and budgeting problems, are among the topics covered.

Pay of Municipal Employees in Michigan

1952 MICHIGAN MUNICIPAL WAGES AND SALARIES—*Published by the Michigan Municipal League, 205 S. State St., Ann Arbor, Mich.* 1952. 93 *pp.* $3.

Pay information for 108 positions, ranging from unskilled labor to administrative positions in 102 Michigan cities with populations over 4,000, as of January 1952. In addition to wages and salaries, other current practices are shown in regard to overtime pay, paid holidays, and scheduled work hours per week. The $3 purchase price includes price of all supplements to the bulletin that will be issued at periodic intervals throughout 1952, to show any reported changes in pay.

Federal Bills of Municipal Interest

PENDING FEDERAL LEGISLATION OF MUNICIPAL INTEREST — *February* 1952 *issue of* American Municipal News. *American Municipal Association, 522 Transportation Building, Washington 6, D. C. Subscription, $3 a year.*

This 12-page issue presents statements of fact and guides to municipal action on a number of pending bills in Congress which vitally affect municipal growth and development. Among them are: Federal-aid Highway Legislation, Social Security, Pay-in-lieu of Taxes, Intergovernmental Relations, Tideland Ownership, Census of Governments, War Damage and Assistance, Insurance Coverage of Civil Defense Workers, Airport Funds, School Aid, Postal Rates, Water Pollution Control, Air Pollution Control, and Crime.

Assessment Convention Papers

ASSESSMENT ADMINISTRATION, 1951: PAPERS PRESENTED AT THE SEVENTEENTH INTERNATIONAL CONFERENCE ON ASSESSMENT ADMINISTRATION — *Published by National Association of Assessing Officers, 1313 E. 60th St., Chicago 37, Ill.* 206 *pp.* $5.

The Seventeenth International Conference on Assessment Administration, held in St. Louis, Mo., October 8-10, 1951, was sponsored by the National Association of Assessing Officers and affiliated state and provincial associations. Among the nearly 50 talks here reproduced are papers on "What to Expect in Real Estate Values," by Roy Wenzlick; "Civil Defense and the Assessor," by Brig. Gen. Clyde E. Dougherty, and "The Urban Redevelopment Program," by Charles L. Farris. Roundtable topics included Assessment of Office Buildings, Luxury Homes, Farm Lands, State Supervision and Assistance; and the four demonstration clinics dealt with "The Preparation of a Building Classification and Cost Schedule," "Making Allowances for Depreciation in Assessment of Real Estate," "Techniques Used in the Assessment of Business Inventories and Equipment," and "Utilities."

Arlington County Makes Economic Survey

ECONOMIC SURVEY OF THE LAND USES OF ARLINGTON COUNTY, VA.— *By Homer Hoyt Associates, 1951. 50 pp. To obtain copy remit $5 to Treasurer of Arlington County, Planning Division, Room 130, Court House, Arlington 1, Va.*

The facts provided in this Economic Survey can be used for determining the most beneficial and efficient use of land in Arlington County, thereby providing a foundation on which to base future necessary zoning modifications. It relies heavily on the compilation and interpretation of basic data on population size and character, employment patterns, housing, county revenues and expenditures, and similar related factors, and can be periodically updated by applying the latest county data. The 45 tables give statistics on the incomes of Arlington residents, where the money is spent, number and type of dwelling units, etc. Dr. Hoyt points out that normally each person engaged in basic employment (which in Washington and environs is largely government work) supports one person engaged in service employment. He believes that the extraordinarily rapid rate of expansion in federal employment during the last 17 years will give way to moderate gains in federal jobs and in private employment.

Northern Westchester Joint Planning Operation

NORTHERN WESTCHESTER, A SERIES OF PLANNING REPORTS FOR SIX MUNICIPALITIES— *By the Northern Westchester Joint Planning Program,* 1952. *Illus.* 172 *pp. Limited number of copies available from Mr. Henry Fagin, Director, Regional Plan Association, 205 E. 42nd St., New York 17, N. Y., at $1.50 per copy, postpaid. Other requests to Mr. E. P. Barrett, Supervisor, Town of Bedford, N. Y.*

The Northern Westchester Joint Planning Program was established as a three-year contract among six municipalities for the purposes of providing a body of essential basic data and of furnishing each planning board with continuous professional planning assistance. The municipalities included in the program were Bedford, Lewisboro, Mount Kisco, North Castle, Pound Ridge, and Somers. This excellent, comprehensive report, reproduced by offset in a handy 5½-by-7½-inch size, with many maps and illustrations, surveys what was done during the three-year period of the contract, now completed.

The report itself leaves a most valuable legacy of facts and information about the area as a whole, with separate chapters devoted to the background of Northern Westchester, Community Appearance, Public Utilities, Economic Activities and Trends, Circulation, Land Use, and Land Development Regulation.

The Appendices are devoted to specific land-development regulations drafted for the individual municipalities involved in the Joint Planning operation, and reveal the range of choice offered to them in deciding what to adopt or reject.

Highway-Railway Grade Crossing Elimination

SURVEY OF GRADE SEPARATION FINANCING IN THE UNITED STATES—*By the Tax Research Association of Houston and Harris County, Inc., William E. Davis, Jr., Executive Secretary, 812 Union National Bank Bldg., Houston 2, Texas.* 1952. *Mimeo.* 48 *pp.*

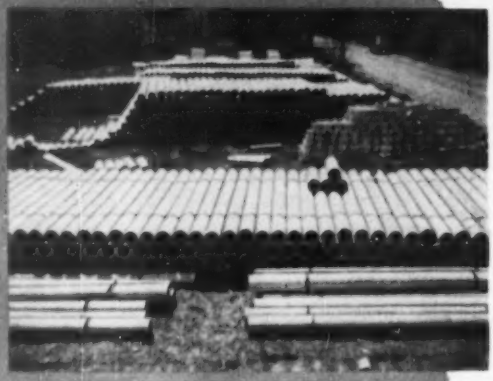
This survey is based on information obtained from questionnaire replies from 37 State Highway Departments, the District of Columbia, and 26 metropolitan cities. It is a comprehensive collection of data on the financial outlays for eliminating highway-railway grade crossings, and indicates that although the railroads prior to 1930 usually paid more than half of the bill, the increased use of highways by motor vehicles has completely changed methods of financing. Today the taxpayers bear more than 90% of highway-railway grade crossing elimination costs, and the railroads less than 10%. The survey shows how much federal aid was received, how much the cities and states paid; the average cost of each project, and finally the total number of grade crossings eliminated.

County Manager Charters and Legal Digests

DIGEST OF COUNTY MANAGER CHARTERS AND LAWS—*National Municipal League, 299 Broadway, New York 7, N. Y. Second Edition,* 1951. *Mimeo.* $2.

This report will be found especially useful for those interested in encouraging further the present wave of interest in reform of county government structures.

Contents include a review of state constitutions which permit county manager structures; digest of model county charter of National Municipal League; digest of constitutional provisions, laws and charters, and a listing of other counties having appointive executives.



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"Century" Pipe awaiting installation.

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Thus, another community is added to the growing and already large number of places in every State where this modern water main has been adopted.

Right from the start this modern water system provides economical operation by the relatively low cost of installation and reduced carrying charges plus the advantages inherent in the pipe itself.

Made of two practically indestructible materials, asbestos fiber and portland cement, "Century" Pipe is strong and durable. It is highly resistant to external corrosion and internal corrosion (tuberculation) cannot take place due to its non-metallic composition. The permanently smooth inner surface guarantees continuous flow and minimum pumping costs.

It will pay you to investigate the many cost saving features of "Century" Asbestos-Cement Pipe.

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"See us at Booths No. 13 and 14, American Water Works Association Convention, Kansas City, Missouri, May 4-9, 1952"

Book of the States, 1952-1953

THE BOOK OF THE STATES, 1952-53 Edition —*Council of State Governments*, 1313 *East 60th St., Chicago* 37, *Ill.* 1952. 733 *pp. With two* 1953 *Supplements*, $10. *The* Book *alone*, $7.50.

This is the ninth edition of the standard reference work on state governments—their organization, activities, finance, and personnel. The book, new and comprehensive, includes articles and summaries in the major fields covered by leading authorities.

Rosters of state officials, listing the elected and appointed heads of the more important departments of all state governments, are included, as are full lists of members of the Legislatures.

The book has eight sections: The first deals with intergovernmental relations; the second treats of state constitutions, constitutional revision, and the election laws in the states; the third, reports on legislatures and legislation, growth of legislative councils and service agencies, regulation of lobbying, etc.; the fourth is devoted to administrative systems and developments in reorganization.

Fifth is a section on state finance, setting forth compactly a mass of material on state taxation and other revenues, tax collections, debt, and expenditures. Section VI, more than 200 pages in itself, reports on major state services; Section VII deals with the state judicial systems; and the final section presents basic facts about the states and territories, including statistical summaries, rosters and directories.

Council-Manager Plan Brochure

THE STORY OF THE COUNCIL-MANAGER PLAN —*National Municipal League*, 299 *Broadway, New York* 7, *N. Y. Revised* 1952. 36 *pp.* 20 *cents.*

The new edition of this handy brochure gives more up-to-date examples of municipalities where the manager plan has been particularly successful. It also includes a directory of places having the plan in operation—nearly 1,100 municipalities and counties. The booklet is especially useful for wide distribution and use during council-manager charter campaigns.

Study of Decline In an Urban Area

HOUSING MARKET BEHAVIOR IN A DECLINING AREA—*By Leo Grebler. Columbia University Press*, 2960 *Broadway, New York* 27, *N. Y. March* 1952. 265 *pp.* $4.50.

This volume, one of the publications of the Institute for Urban Land Use and Housing Studies at Columbia University, is concerned with the long-term changes in inventory and utilization of housing on New York's Lower East Side.

This book is an effort to reduce to manageable proportions research on urban decline through studying and tracing property transfers over a fifty-year period. Quantitative relations among bona fide sales, non-bona fide sales, foreclosures, and voluntary surrenders—relations important to the observation of market behavior—are established. The study examines such aspects of market behavior as the number of dwelling units standing; the rate of demolition; the use of sites of demolished housing; the relative importance of police power, market forces, and public land use in bringing about demolition; the timing, magnitude and concentration of vacancies in certain segments of the housing supply; the characteristics of ownership of slum property, and the operation of the so-called filtering-down process.

Many of the book's findings, illustrated by maps, charts, and tables, run counter to untested but prevalent opinions. The findings and the methods used will both be of interest to those in other cities working on similar problems.

North Carolina Policemen

POLICE STANDARDS, CONDITIONS OF EMPLOYMENT, AND COMPENSATION IN NORTH CAROLINA—*Compiled by Donald B. Hayman. Institute of Government, University of North Carolina, Chapel Hill, N. C.* 1952. *Mimeo.* 43 *pp.*

This survey, undertaken at the request of the Executive Committee of the North Carolina Police Executive's Association, includes data obtained from replies to questionnaires sent to all police chiefs in North Carolina. Primary emphasis has been placed on police-employment standards and other conditions of employment not covered in previous surveys. The study also includes unpublished information on 43 towns of less than 2,500 population. The data collected are presented in 19 tables, the first 13 being summaries of the information given in detail in the last six tables, and the conclusion draws a picture of the "average" municipal policeman, his physical qualifications, character, working conditions, salary, and prospects for advancement.

Duties of City Clerk

SECOND INSTITUTE — 1951, ADMINISTRATIVE PROCEDURES FOR THE CLERKS OF WISCONSIN COUNTIES — *Bureau of Government, University of Wisconsin Extension Division, Madison, Wis.* 1951. *Mimeo.* 75 *pp.*

This manual, presented by the Wisconsin County Boards Association, the Wisconsin County Clerks Association and the Bureau of Government of the University of Wisconsin Extension Division, was prepared for use during and after the Institute (held June 18-19, 1951, at the University of Wisconsin Extension Center in Green Bay). It was intended to serve as a "textbook" to be read before the sessions started, as a notebook during the sessions, and later as a reference book.

The program schedule divided the clerks' activities into three major areas: the clerk's role in the administration of elections, the clerk as auditor of school tuition and transportation claims, and the clerk's function in determining certain special county valuations. There is a wealth of material on all of the foregoing subjects, much of it in outline form to be discussed and filled in at the Institute.

Small City Recreation Plan

MASTER PLAN FOR RECREATION, MURFREESBORO, TENN.—*Tennessee State Planning Commission*, 517 *Commerce Street, Nashville* 3, *Tenn. Pub. No.* 234. *February* 1952. 56 *pp.* $1.

This report, officially adopted as a part of the comprehensive master plan being developed by the City Planning Commission of Murfreesboro is a good example of the processes involved in reviewing the facilities and presenting specific recommendations for an enlarged recreation program in a small community. The report itself was prepared by the Middle Tennessee Office of the Tennessee State Planning Commission in cooperation with local officials.

Oakland Shoreline Development Report

SHORELINE DEVELOPMENT—CITY OF OAKLAND —*City Planning Commission, Oakland, Calif.* 1952. *Illus.* 89 *pp.*

This proposed plan of shoreline development, submitted as part of the master plan of Oakland, is a model report of its kind, handsomely illustrated, and with clear-cut recommendations for carrying out the program in stages. It should be of general interest to other cities concerned with the evolution of an approach for their own shoreline improvement.

Regional Plan in British Columbia

THE LOWER MAINLAND LOOKS AHEAD—*The Lower Mainland Regional Planning Board of British Columbia*, 26 *Lorne Street, New Westminster, B. C. January* 1952. 62 *pp.* $2.

This excellent, comprehensive report is important because it places urban growth and development problems in their proper regional setting and perspective. The report is also significant as a genuine example of regional-planning operation.

The Lower Mainland Regional Planning Board of British Columbia consists of representatives of the municipalities and unorganized areas of the Lower Fraser Valley. It is financed by its member municipalities and the Government of British Columbia through the Department of Municipal Affairs. Member cities in 1951 included Vancouver, Chilliwack, New Westminster, Port Coquitlam, Port Moody; the districts of Burnaby, Chilliwack, Coquitlam, Delta, Fraser Mills, Kent, Langley, Maple Ridge, Matsqui, Mission, North Vancouver, Pitt Meadows, Richmond, Surrey and West Vancouver; and the Villages of Hope, Mission, and Harrison Hot Springs.

The report presents facts about the region and states broad principles which should underlie the development and use of land in the fast-growing area. It also recommends specific action for future activities of the Regional Planning Board, the municipalities, the Provincial Government and the Federal Government.

House-to-House Selling Restrictions

RESTRICTIONS ON HOUSE-TO-HOUSE SELLING—*Domestic Distribution Department, Chamber of Commerce of the United States, Washington* 6, *D. C. February* 1952. 4 *pp.*

A brief review of the factors involved in the adoption of restrictive ordinances against itinerant salesmen. The Domestic Distribution Department Committee is opposed to special and restrictive ordinances affecting solicitation and selling unless absolutely needed to prevent fraud and dishonesty.

Canada's National Capital Plan

PLAN FOR THE NATIONAL CAPITAL OF CANADA, 1950—*By Jacques Greber, Consultant. General Report*, 308 *pp.*, 211 *plans, drawings, and photos*, 28 *color plates. Annex to Report, in-folio Atlas*, 20 *color plates.* 2 *Volumes*, $10. *Available from The King's Printer, Sales and Distribution Division, Ottawa, Canada.*

This handsomely illustrated report contains a comprehensive plan for the national-capital region of Canada, covering approximately 900 square miles in the provinces of Ontario and Quebec, with the cities of Ottawa and Hull as urban nuclei. Several of the chapters are signed by authoritative Canadian specialists, including the chapters on history, agriculture, geology, and climate.

The national-capital plan has a dual purpose: it aims primarily at the planning and mapping of the development of the group of municipalities which form the capital region, with a view to ensuring the comfort and well-being of their inhabitants and facilitating all their activities; and also it aims at meeting the special problems and functions of a capital—Parliament, Government, diplomatic life, and national and international conventions, in an atmosphere of dignity, orderliness, and welcome.

The report stresses that it is the Capital's duty to set the example for other Canadian cities, in their adoption of planning procedures suited to the needs of modern living.

MUNICIPAL BUILDING
CITY OF PONCA CITY
PONCA CITY, OKLAHOMA
Mr. R. W. Beyerlein
Nordberg Mfg. Co.
Milwaukee, Wisconsin
Dear Mr. Beyerlein:
Just a note to let you know that our plant is running fine. We have pulled the heaviest electric load in the history of our plant during the past three months. Hot weather hit here about June 15 and air conditioners and fans together with an increased seasonal load taxed our plant and electric system to capacity and over. We can pull roughly 7000 kilowatts with all Nordberg engines running and take care of the swings, etc. This summer we had 7300 kilowatts for hours every day and with an outside temperature of 100 to 108 degrees generating a total of 3,301,000 kilowatt hours for the month.
The 3600 hp Nordberg gas burning engine was kept on the line for 24 months non-stop 2500 Kw steady load, the other two Nordberg gas Diesels were loaded to 1350 and 1100Kw respectfully leaving 2350 Kw for the 3 old "EG" Nordberg Diesel engines. Remember one of these 800 Kw engines is 26 years old, (they still pull their rated load with the original economy).
We have certainly put these Nordberg engines on a long hard test and the results are very gratifying.
It might be of interest to know that last year our plant cost including depreciation was about 24 mills, this year with the increased load we are doing still better.
Yours truly,
Pat Schlesinger
PS/ms
Pat Schlesinger, Supt.

SEVENTH NORDBERG ENGINE reflects outstanding service record set by Ponca City

AS Mr. Schlesinger's letter points out, Ponca City, Oklahoma, has set an impressive record for dependable, economical power production . . . thanks to sound, efficient management and the reliable, low cost operation of Nordberg Diesel and Duafuel power.

Having originally installed 4 Nordberg oil burning Diesels, this progressive plant was one of the first to turn to low cost natural gas, putting into service a 2,400-hp. Nordberg Duafuel engine in 1947. Next, one of the original Diesels which had been in service since 1937, was converted and began burning gas in December, 1947. In May, 1949, a new 3,600-hp. Nordberg Duafuel engine was put on the line, which brought total plant capacity to 12,000 hp., of which gas engines made up 8,250 hp.

With this successful background, it was natural that when Ponca City needed more power, officials again turned to Nordberg . . . and ordered a new 4,275 hp. Duafuel unit—*their seventh Nordberg Engine.*

NORDBERG MFG. CO., Milwaukee, Wisconsin

P252

BUSCH-SULZER
A DIVISION OF NORDBERG

NORDBERG
DIESEL ENGINES

Administrative Technique

ADMINISTRATIVE ACTION, THE TECHNIQUES OF ORGANIZATION AND MANAGEMENT—*By William H. Newman, Prentice Hall, Inc., 70 Fifth Ave., New York 11, N. Y.* 1951. 484 *pp.* $6.35.

This book deals with principles and techniques of administration. It is written in terms of practical operating problems and seeks to give the executive a better perspective and understanding of his task of administering. There is no separate section dealing with public administration as such. Rather, the author considers the principles outlined to be generally applicable and equally useful to both private and public management.

The author points out that a considerable body of knowledge exists about successful techniques for administering an enterprise. This knowledge, however, is in scattered places, often consisting of intangible know-how that is passed from one executive to his subordinates without any clear-cut formulation. Moreover, basic principles of administration are frequently so encumbered with a specific application that their key features are not apparent.

The book brings together existing knowledge regarding the basic processes of administration, states these ideas in a practical and useful form, and adds new ideas and interpretations that will assist executives.

A New Town Plan

TOBYHANNA, NEW TOWN DEVELOPMENT, 1951—*Clifton E. Rodgers, Planning Consultant, Beaver Falls, Pa.* 64 *pp.*

This is a plan for development of a complete new town near the village of Tobyhanna in northeastern Pennsylvania. The plan is the result of intense local interest and exhaustive technical study brought about by the announcement of construction of a United States Army Signal Corps Depot in the vicinity which will employ large numbers of civilian workers. Fortunately, the Board of Supervisors and Planning and Zoning Commission of Coolbaugh Township have had the foresight to attempt to deal with the ensuing problems before the township is overwhelmed by the new influx.

The plan is of general interest because it includes details and specifications on homes, streets, public utilities, schools, parks and playgrounds, shopping facilities, public buildings, and other features. A financial program of action has also been drawn up, on a stage by stage basis, indicating preliminary estimates of cost for each project, along with recommended means of accomplishment.

New Pennsylvania Tax Laws

NEW TAX LAWS OF PENNSYLVANIA—1951—AND PENNSYLVANIA TAX CHART, 1952 *Edition. Prepared by Research Bureau, Pennsylvania State Chamber of Commerce, State Chamber Bldg., Harrisburg, Pa. Bulletin 138 and 137. February* 1952.

The 22-page booklet on new tax laws of Pennsylvania reports on legislation adopted during 1951. The booklet is supplemented by a tax chart showng the total structure of the Pennsylvania State Tax System.

The two new taxes imposed include a "property tax" on net income of certain corporations and a realty transfer tax. Among the changes in local tax laws is the one allowing third class cities to provide for a "graded tax plan" with separate assessment and differential rates on land and buildings. The widely known Act 481 of 1947 again was amended to provide, among other things, for a limited extension of its taxing powers to second-class townships.

Papers on Community Planning in Britain

PROCEEDINGS, TOWN AND COUNTRY PLANNING SUMMER SCHOOL, 1951 — *Town Planning Institute, 18 Ashley Place, London, S.W.1.* 102 *pp. Five shillings.*

These proceedings contain several papers and reports which will be of general interest, including "A Critical Analysis of the Working of the Town and Country Planning Act 1947," "Some Design Problems and Trends in the Planning of Towns," "Local Government at the Cross-Roads," "Public Influence on Planning," "The Place of the Specialist in Town and Country Planning," "New and Expanded Towns," and "Rural Planning Problems."

Assessors' Manual

MANUAL FOR THE OFFICE OF THE REAL ESTATE ASSESSOR OF THE CITY OF NORFOLK, VA. *Approx.* 150 *mimeographed pages.*

This appraisal manual is designed for the use of the City Assessor and his staff as a guide in the assessment of the value of land and improvements for tax purposes. It is a product of four years' study and research, and deals with land valuations and improvements on real estate. Photographs of residences are used in the manual in order to show more clearly the classes and types of dwellings. There are also 32 different examples of the computation of land values for various shapes and types of parcels and complete instructions on how to record them on an appraisal form.

Legal Developments in Local Governmetn

LOCAL GOVERNMENT—*By William Miller. Reprinted from* 1950 *Annual Survey of American Law, New York University School of Law,* 100 *Washington Square East, New York* 3, *N. Y.* 31 *pp.*

A summary of legal developments in such aspects of local government as intergovernmental relations; area, organization, structure and powers; police power; traffic control; schools; personnel; fiscal arrangement; public works; zoning and planning.

Planning and Housing Reports

CLEVELAND, OHIO—Six-Year Capital Improvement Program, 1952-1957. City Planning Commission, 501 City Hall, Cleveland 14, 1951. 16 pp.

MILWAUKEE, WIS.—Annexation, Governmental and Functional Consolidation, And City Planning. Board of Public Land Commissioners, 155 E. Kilbourn Ave., Milwaukee 2. January 39, 1952. Mimeo. 11 pp.

OSHKOSH, WIS.—An Integrated Street System for Oshkosh, Wisconsin. Prepared by the City Planning Commission, City Hall. Mimeo. Maps. 32 pp.

Other Reports Received

DELHI, INDIA—Delhi Municipal Administration Since Independence. Issued by the Publicity Department, Delhi Municipal Committee, Municipal Information Series No. 1. 1951. Illus. 32 pp.

HOUSTON, TEXAS—Outstanding Debt—City of Houston. Tax Research Association of Houston and Harris County, Inc., 812 Union National Bank Bldg., Houston 3, Texas.

KANSAS CITY, MO.—Facts and Figures Relating to the Operations of the City of Kansas City, Missouri. A statistical supplement to the City Manager's annual report. June 30, 1951. 66 pp. 1950-1951.

MARYLAND—Local Government Finances in Maryland, 1950-1951. State Fiscal Research Bureau, City Hall, Baltimore 2, Md. 75 pp.

MILWAUKEE, WIS.—Lower Tax Rate for 1952. Prepared by Virgil H. Hurless, City Comptroller.

MOUNT UNION, PA.—Annual Report for the Year Ending December 31, 1951. The President, Borough Council, Mount Union, Pa. February 1, 1952. 20 pp.

NEW JERSEY—Thirteenth Annual Report of the Division of Local Government, 1950. Prepared by Department of Treasury, Division of Local Government, Walter R. Darby, Director. Statements of financial conditions of counties and municipalities. 374 pp.

NEW YORK—Vehicle and Traffic Law of The State of New York with the Uniform Vehicle Code. A report of The New York State Joint Legislative Committee on Motor Vehicle Problems, Senator Seymour Halpern, Room 502, The Capitol, Albany, N. Y. 1951. 355 pp.

NEW YORK, N. Y.—Common Sense About New York City's Finances. Citizens Budget Commission, Inc., 51 E. 42nd St., New York 17, N. Y. February 6, 1952. Mimeo. Unpaged.

——Triborough Bridge and Tunnel Authority Annual Report, 1951. Triborough Bridge and Tunnel Authority, Triborough Station, Box 35, New York 35, N. Y. February 13, 1952. Unpaged.

PITTSBURG, KANS.—Annual Report, 1951. The City Manager, Pittsburg, Kans. Illus. Maps. Graphs. 40 pp.

QUEBEC, CANADA—1945 Municipal Statistics With Summary for 1945-1948. 1950. Hon. J. Paul Beaulieu, Minister of Trade and Commerce, Department of Trade and Commerce, Bureau of Statistics, Quebec, Canada.

ROCHESTER, MICH.—Annual Report on the Operation of the Sewage Treatment Plant, 1951. Prepared by R. D. Craun, Superintendent. Mimeo. Charts. Unpaged.

ST. PAUL, MINN.—Annual Report of The Board of Water Commissioners, 1949-1950. Tables. 177 pp.

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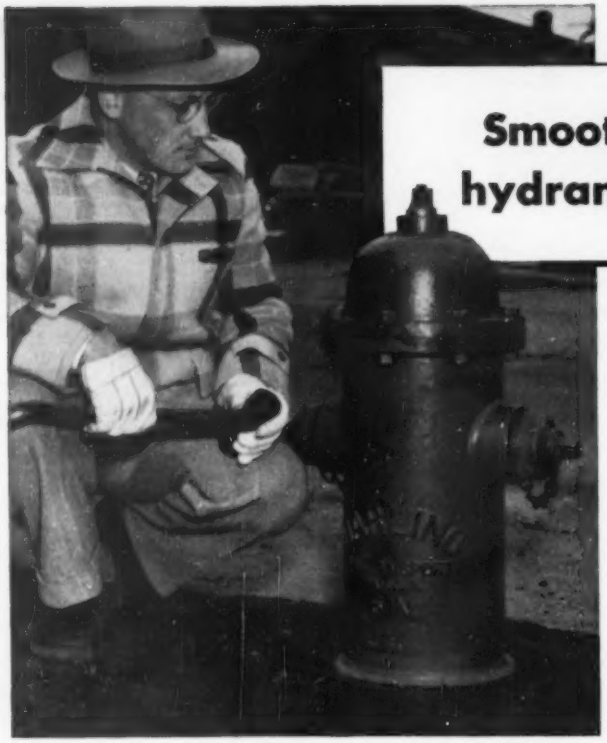


Smoothest operating hydrant on our system!

. . . that's what they're saying about the new Darling B-50-B ball bearing operated fire hydrant

MR. JOSEPH M. ROGEVEN, Superintendent of Water Distribution, City of Jackson, Michigan, is pictured above with one of his new Darling B-50-B hydrants. In a recent letter he has this to say . . .

"Your new B-50-B ball bearing hydrant, installed several months ago, has been examined and tested frequently. It is the easiest and smoothest operating hydrant on our system.

"We have been using Darling hydrants since 1907 and have several other makes also in our system, but we feel this B-50-B is really revolutionary. The new 'O' rings, replacing conventional packing, will mean less maintenance cost and worry, which is an item we consider carefully when selecting our equipment."

Mr. Rogeven could go on to tell you that the B-50-B is a packless, *dry-top* hydrant . . . and that its ball bearing action easily cuts operating torque a full 50 percent. And that's only the beginning! So why not get *all* the facts?

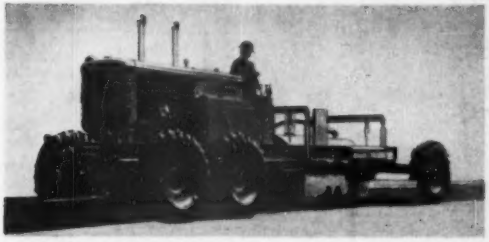
Simply write for data bulletin No. 5007

DARLING VALVE & MANUFACTURING CO.

Williamsport 10, Pa.

Municipal Purchasing News

Information for officials interested in equipment and services for the construction, operation, and maintenance of municipal utilities



The Model 42 roadmixer, which has a capacity up to 200 tons per hour.

One-Man Travelling Mixer For Street Paving Problems

The question of quality streets at economy prices has a practical solution in the self-propelled, single-pass, road-mixer, according to the Wood Mfg. Co., Box 620, North Hollywood, Calif. The mixer can be used either in soil-cement stabilization or in asphalt-base stabilization and surfacing, using asphalt cut-back, emulsion, oil, tar, or other bituminous binders.

Two models that fit into many municipal street-improvement conditions are the Model 42, with a capacity up to 200 tons per hour, and the Model 36, whose capacity is 150 tons per hour. Both are self-propelled, mix thoroughly in one pass, pick aggregate cleanly off the subgrade and blend it with the binder in a pugmill while the binder is hot, and discharges it into a windrow. The model indicates the size in inches of the pugmill.

The City of Long Beach, Calif., has used one of these machines for many years in its pavement program, and recently purchased its second Model 54. It also has demonstrated its usefulness in airport and parking-area construction.

Fulton Bag & Cotton Mills Has Plant in Crystal, Minn.

Norman E. Elsas, chairman of the board of the Fulton Bag & Cotton Mills, Atlanta 1, Ga., announces the opening of the company's modern manufacturing plant at the Village of Crystal, Box E, Minneapolis, Minn.

August Denk, who has been with the organization since 1916, will manage the Crystal operations, as he has in Minneapolis for over 10 years. Sales manager is Gene DuBois, who has been with the company for more than 25 years. Jack C. Baker is superintendent of the plant.

Speaking of the new plant, Mr. Elsas said, "When we planned the Crystal operation, we endeavored to design a plant based on our more than 84 years of experience. This factory will utilize the most modern equipment and will produce the very finest textile products possible."

Porcelain framed street name sign, available with necessary frames, fixtures, and hardware ready to assemble and mount.

Porcelain Framed Street Name Signs

Celebrating its 30th anniversary, the Municipal Street Sign Co., Inc., 777 Meeker Ave., Brooklyn 22, N. Y., has developed a new modern size street name sign, utilizing weatherproof porcelain enameled frames.

According to the manufacturer, these new heavy gauge frames completely protect the large 6 by 30-inch porcelain sign plates and merit the company's coverage with its 15-year free-replacement guarantee.

Both the wing and criss-cross style are now in volume production and have already been adopted as standard in Brooklyn, N. Y., and Canton, Ohio, and in many other large cities.

Signs are furnished with necessary frames, fixtures, and hardware ready to assemble and mount. All parts are either non-ferrous or rust-proof.

The company states that its equipment requires no maintenance, relettering, refinishing, dismantling, no interruption of sign service, and they are less expensive because they last longer.

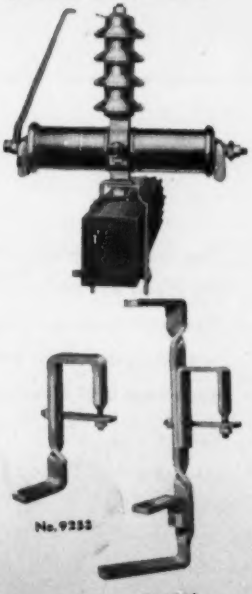
Lightning Arresters, Transposition Brackets

Hubbard and Co., 6301 Butler St., Pittsburgh 1, Pa., announces the addition of a new member in its line of Autogap lightning arresters, and two transposition brackets to its line, designed for the heavy loads imposed by long spans, corners, and winter icing.

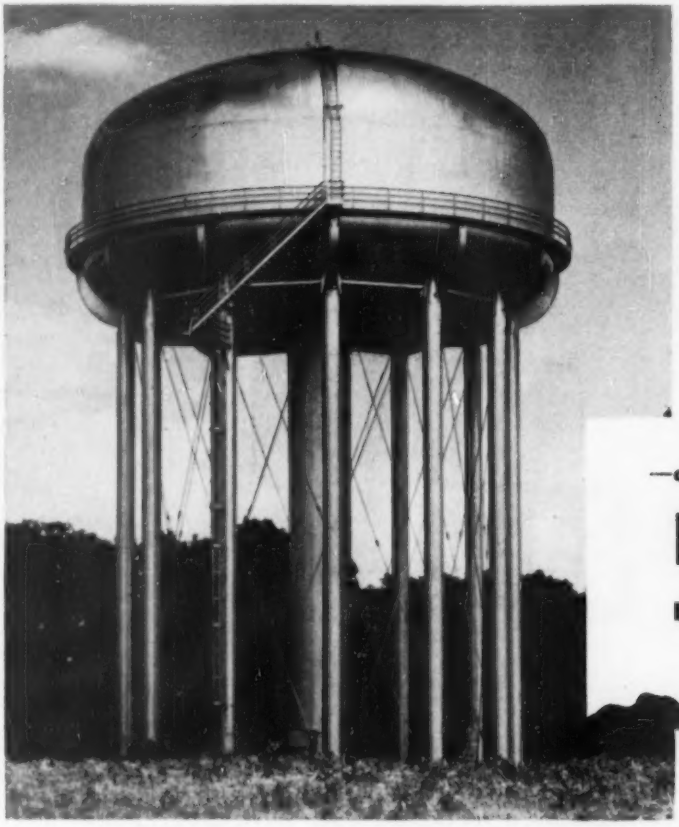
Known as No. 2327, the Autogap lightning arrester is of horizontal design and has the twin exhaust to provide maximum surge capacity. It has a maximum voltage rating of 18,000 volts, and may be installed on arm or pole with standard Hubbard mounting brackets.

The transposition brackets, No.'s 9253 and 9264, clamp solidly on standard 3¼ by 4¼-inch arms, with ample "give-and-take" to allow for variations in the dimensions of such arms, and eliminate canting or turning. The brackets are formed of ⅝ by 1½-inch galvanized steel and have 11/16-inch pin holes and ⅝-inch screw holes for attachment with wood or lag screws.

Literature describing this equipment may be obtained by writing to the manufacturer.



The Autogap Lightning Arrester is photographed at upper right, and two models of Transposition Bracket at the lower right.



for

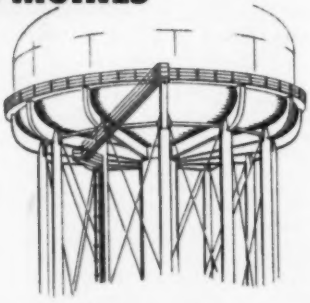
Cincinnati, Ohio

—a million gallon

RADIAL CONE

ELEVATED STEEL TANK

by PITTSBURGH • DES MOINES



The *Radial Cone* design is particularly applicable for elevated tanks of medium to large capacity where *low head range* is an important consideration. • Write for a discussion of the Pittsburgh-Des Moines elevated tank type best meeting *your* requirements.

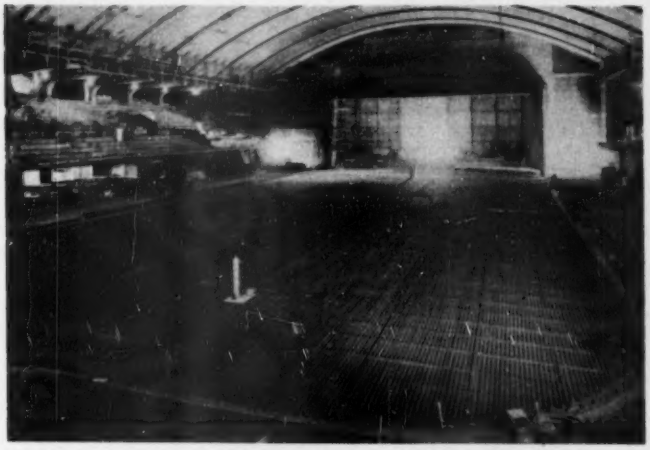
PITTSBURGH•DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH (25)	3412 Neville Island	DES MOINES (8)	913 Tuttle Street
NEWARK (2)	215 Industrial Office Bldg.	DALLAS (1)	1217 Praetorian Bldg.
CHICAGO (3)	1216 First National Bank Bldg.	SEATTLE	520 Lane Street
LOS ANGELES (48)	6399 Wilshire Blvd.	SANTA CLARA, CAL.	619 Alviso Road

Uniform Freezing Surface for This Ice Skating Rink Is Ensured by 42 tons of One-inch Wrought Iron Pipe



It took 42 tons of one-inch wrought iron pipe, made by the A. M. Byers Co., Clark Building, Pittsburgh, Pa., to ensure a uniform freezing surface for the ice skating rink at Onondaga County War Memorial Auditorium, Syracuse, N. Y. The rink, which will be used for sports events, ice shows, and public skating, measures 85 by 195 feet. Seating facilities will accommodate approximately 7,000 persons. The company, a leading manufacturer of wrought iron pipe, has also been active in development of systems that remove snow and ice from outdoor roadway and sidewalk surfaces.

Badger Meter Company President Is Dead

Charles William Wright, aged 60, president of the Badger Meter Mfg. Co., Milwaukee 10, Wis., died on Feb. 14, of a heart attack.

Mr. Wright was born September 27, 1891, at Alexandria, Va., where he spent most of his younger days. He attended Georgetown University, Washington, D. C., and in 1914 moved to Milwaukee. Here he joined the A. O. Smith Corp. At the outbreak of World War I, Mr. Wright enlisted in the U. S. Army and at the cessation of hostilities returned to his position in Milwaukee.

In 1924, after 10 years of service with A. O. Smith, he left and joined the Badger Meter Mfg. Co. In 1929 he was elected president and became a member of the Board of Directors. Improvement of the product and addition to the personnel of expert engineers and production specialists led to the expansion and rapid growth of the company.

During World War II, Badger Meter became one of the largest producers of bomb fuses in the Midwest. Again, after Korea, the company engaged in producing Ordnance material, but this time at a different location, in its new Brown Deer plant—a unit which represents the culmination of a second program of expansion initiated and developed by Mr. Wright.

The present Badger Meter Mfg. Co. is unquestionably the results of the faith, planning, foresight, and drive of the past president. His inspiration will be missed, but his dream will live on in his accomplishments.

Paint Your Pool with Rubber!
Phelan's HYDROFLEX Rubber-Base Finish Gives Beauty and Low-Cost Upkeep
Gordon Park Swimming Pool, Milwaukee, Wisconsin, painted with Phelan's HydroFlex.

Elasticity and durability are built into this special rubber-base finish. It stands up and keeps its beautiful color under tropical sun or winter frost. Easy to clean because slimy algae can't cling to its satiny tile surface.

Pool owners from coast to coast get two seasons' wear from Phelan's Hydroflex — investigate now!

FREE! Folder showing COLOR SAMPLES and full information. Write

PHELAN-FAUST PAINT MFG. COMPANY
St. Louis 11, Mo. Since 1902

Phelan's HYDROFLEX
RUBBER BASE SWIMMING POOL FINISH

AMONG WATER WORKS MEN...

THE
ELLIS PIPE CUTTER
is *Best*
FOR CUTTING LARGE SIZES OF PIPE

No. 01 Cuts Pipe 4" to 8" | No. 1 Cuts Pipe 4" to 12"

Write for circular and price list No. 34AC on our complete line of pipe cutting tools.

ELLIS & FORD MFG. CO.
FERNDALE 20, MICH.

ROADMASTER Street Sweeper WIRE

High Scleroscope Rating
Uniform temper.

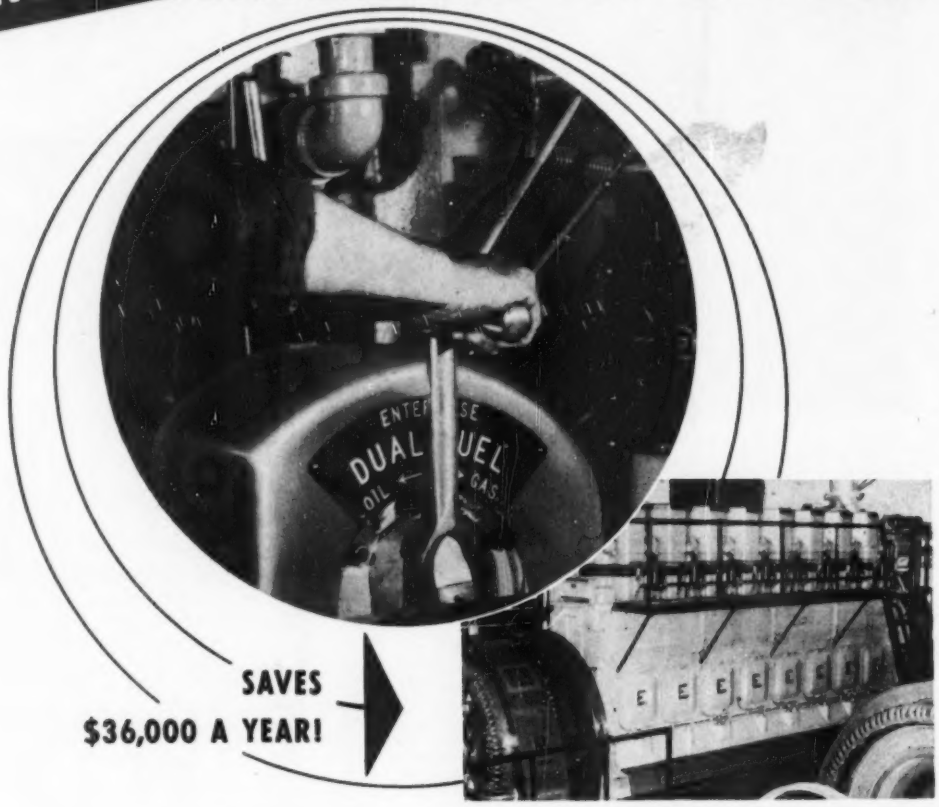
Specially processed for high fatigue — against breakage. Long wearing. Conveniently cut and delivered in 100 and 200 lb. boxes. Prompt shipment from stock of all standard sizes.

This gutter broom wire will prove an economy in your service.

"MORE MILES PER BRUSH"

JOHNSON Steel & Wire Co., Inc.
Worcester 1, Massachusetts
New York Akron Chicago Detroit
Los Angeles Toronto

PROVED ENTERPRISE *Dual Fuel* Power



Wherever natural or sewage gas is available in sufficient quantities, Enterprise DUAL-FUEL engines provide a maximum operating efficiency at greatly reduced fuel costs.

Initial selection of operating fuel is manual, with smooth and positive changeover from one fuel to the other simplified through Enterprise single-lever control.

Any fluctuation in gas pressure is compensated for automatically by a corresponding increase or decrease of the gas-fuel ratio, thereby *maintaining constant engine speed and load.*

Get full details on quality-built cost-saving Enterprise DUAL-FUEL engines today. Models from 68 to 1755 BHP per unit, generator sets to 1250 KW, turbocharged or normally aspirated.

Two Enterprise Dual Fuel Units are now in service at the Municipal Utilities plant in Broken Bow, Nebraska. Their combined capacities of 1800 KW more than doubles the capacity of the three straight diesels formerly in operation—at an estimated saving of $36,000 per year in fuel costs alone!

Enterprise
DEPENDABLE
Diesels

ENTERPRISE ENGINE & MACHINERY CO.
A Subsidiary of General Metals Corporation
18th & Florida Sts., San Francisco 10, California

BOSTON • CHICAGO • FT. WORTH • KANSAS CITY • LOS ANGELES • NEW ORLEANS • NEW YORK • SEATTLE • ST. LOUIS • WASHINGTON, D. C.

Don't Dig Unnecessary Trenches

Drill bit and bore pipe in bell hole at completion of boring operation. The photograph is of the San Bernardino, Calif. Water Department, boring for installation of a water service.

An improved boring tool has been developed that has proved useful for water, power, and other utilities that will make the installation of services easier, according to the Howell Utility Tool Co., 261 Bloomington Ave., Rialto, Calif. The tool can cut through such tough earth formations as decomposed granite, hard-packed sand, and clay. The company states that no extensive trenching is necessary, and the drill can bore long holes that easily accept the inserted pipe.

The tool is designed with a circular shape and rotating action of the hardened steel cutters to provide for self-sharpening; the circular cutters will roll off any pipe or other metal structure, and the metallic sound on the bore pipe gives ample warning to the operators.

The manufacturer points out that heavy, especially-built equipment is unnecessary since present air motor and bore pipe may be used, and where no air motor or compressor is available, a two-man handcrank can be made (the 100-L water hose connector provides water flow) enabling two or more crews to install service lines at the same time. E. C. HOWELL, *Owner*

Refinite Corporation's Sales Vice-President

W. H. Ostenberg, president of the Refinite Corp., Dept. AC-A, Omaha, Nebr., reports the appointment of Norman E. Tucker as vice-president in charge of sales. He also is manager of the Government Contracts Division. Mr. Tucker joined Refinite in 1949, before which time he was general sales manager of the Elgin Softener Corp., Elgin, Ill.

He holds membership in the American Society of Mechanical Engineers, and Professional Engineers Certificates in the States of Illinois, Michigan, and Colorado.

Industrial Products Head For Blaw-Knox Company

W. Cordes Snyder, Jr., president of the Blaw-Knox Co., 2009 Farmers Bank Building, Pittsburgh 22, Pa., announces that Otto G. Schwenk has been named vice-president in charge of industrial products. Mr. Snyder said that this is a new position created within the company and that Mr. Schwenk will have executive responsibilities connected with the manufacturing divisions of the concern.

Mr. Schwenk, before joining Blaw-Knox, had been vice-president in charge of production and a director of The Yale & Towne Mfg. Co., New York, N. Y., prior to which he had been connected with the Weatherhead Co., Cleveland, Ohio.

Chester H. Lehman, for 42 years associated with the Blaw-Knox Co., has announced his retirement as executive vice-president of the concern.

At the same time, W. Cordes Snyder, Jr., president, reported that Mr. Lehman will continue as a director and vice-chairman of the organization's board. He also will serve in an advisory and consulting capacity to the president.

Joining Blaw-Knox in 1909, Mr. Lehman was first elected a director in 1912, became a vice-president in 1934, and a senior vice-president in 1936. Since 1937, he has served as vice-chairman and executive vice-president.

The company manufactures equipment for street construction and maintenance.

How CLEANLINESS IS AUTOMATIC WITH BENNETT BILT WASTE RECEPTACLES

Everybody is a member of your cleaning department by conveniently locating Bennett Bilt Self-Closing Receptacles to invite their use for economical neatness and sanitation. *Put them to work for you today.*

ONLY BENNETT BUILT WASTE RECEPTACLES HAVE ALL THESE FEATURES:

- Stainless steel feet
- Extra heavy-gage, corrosion-resistant steel
- All-welded construction
- Smooth surface—no catching or tearing of clothes
- Reinforced rounded corners for strength and appearance.
- Counter-balanced self-closing, independent doors stay closed to provide greater sanitation and reduce fire hazards
- Baked white or green enamel finish

Built for hard usage make these receptacles a natural "buy". Write for fully illustrated catalog.

Below shows how easy it is to remove Osnaberg bags or galvanized liners.

ALSO PRODUCERS OF PAPER TOWEL AND TISSUE PAPER DISPENSERS

Single fold junior paper towel dispensers.

No. 500 and No. 600 tissue paper dispensers for single fold and double fold respectively.

Double fold paper towel dispensers.

BENNETT MANUFACTURING CO., ALDEN, N.Y.

When they're in service 100 Years...

THEY'LL STILL BE FULL OF LIFE!

CLOW

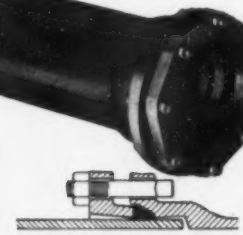
Cast Iron Pipe & Fittings

Long life is the real test of pipe line economy. Clow Cast Iron Pipe and Fittings give you that long life service . . . for a *century and more* . . . and offer the surest way to keep your municipal water supply system at peak efficiency—now and in the years ahead!

City officials throughout the nation have long ago *proved* that it actually costs less to use Clow Cast Iron Pipe and Fittings. They have found that after installation, practically no maintenance, repair or replacement is necessary. So prove to *yourself* that Clow Cast Iron Pipe and Fittings will be a wise investment of public funds!

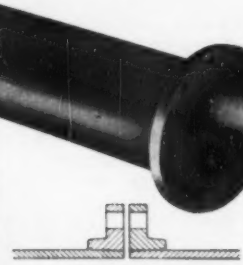
Bell and Spigot Joint

The common bell and spigot type of cast iron pipe joint with standard water bell . . . for poured and caulked lead make up.



Clow Mechanical Joint

A time-saving, easily installed mechanical cast iron pipe that reaches the job with all joint materials complete.



Flanged Joint

For exposed pipeline work. Flange dimensions and drilling conform to requirements of A. S. A. Class 125 for flanged fittings and valves.

Clow Cast Iron Pipe Fittings

All types of Clow Cast Iron Pipe Fittings are offered in straight and reducing sizes for use with Bell and Spigot Joint, Mechanical Joint, and Flanged Joint cast iron pipe.

Bell & Bell One-Eighth Bend

Mechanical Joint 90° Elbow

90° Standard Flanged Elbow

Special Fittings

Clow Foundries are well equipped to produce your special fittings promptly and accurately, to meet particular requirements, and to solve unusual installation problems.

WRITE FOR PRICE AND DELIVERY

Clow Cast Iron Pipe is centrifugally cast—in sizes from 3 to 24", in 18' lengths, and for working water pressures to meet your requirements. Meets Federal Specifications WW-P-421 for Bell and Spigot Cast Iron Pipe for Water. Clow pipe can be easily cut in the field if needed, and drilling and tapping it for services results in superior threads and perfect connections.

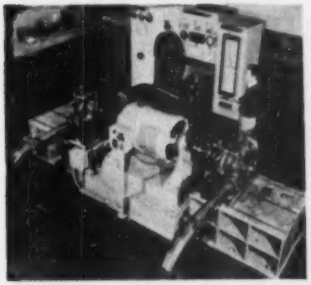
JAMES B. CLOW & SONS

201-299 North Talman Avenue . . . Chicago 80, Illinois

and their National Cast Iron Pipe Division Birmingham, Ala.; subsidiaries Eddy Valve Co. Waterford, New York Iowa Valve Co. Oskaloosa, Iowa

CAST IRON

New Testing Station For Centrifugal Pumps



These test stands are permanent installations consisting of a double ended, electric dynamometer mounted on an automatic lift located between two pre-aligned pump bedplates.

The De Laval Steam Turbine Co., Trenton 2, N. J., recently completed a series of newly designed centrifugal pump testing stations which have reduced overall test costs by 75% during a 12-month trial period.

These stations are engineered to give a complete reproduction of performance for pumps of all sizes and ratings. Although they are primarily designed for production testing, they have also proved valuable in research and development processes for new designs, reports the company.

According to the manufacturer, these stations employ the most modern of test techniques based on current standards and offer an accuracy difficult to attain with previous test procedures. A detailed analysis of all test data assembled over the first 12 months' operation has shown a direct reduction in testing time and a saving of man hours that has effectively cut testing costs 25% of the previous established cost. To De Laval and to industry, the new test stations offer a means of obtaining trouble-free, proved pumps that fit given system heads.

To complete their overall program, De Laval engineers are busy building more of these universal test stands for operation later this year. Each station will handle a segment of the complete range of pumps manufactured at the plant.

The standard test follows all procedures of the latest hydraulic codes. The test engineer operates the pump at the rated speed of the customer's motor and records data for a minimum of six test points. Readings of pressure, flow and power input are taken only after conditions are stable. By conducting tests in this manner, with laboratory instruments, the calculation of test results can be made without the need of theoretical corrections.

NEW! **PATHFINDER**

DOUBLE-DUTY DETECTOR

1. Locates pipes, tees and valves
2. Detects leaks

Save time and money with this two-in-one precision unit.

Powerful
Accurate
Guaranteed

Prompt Delivery

Write Today for Complete Details.

PATHFINDER COMPANY
1736 Beverly Drive • Pasadena 7, California

DON'T LET A

POWER FAILURE

catch you unprepared

A sudden power failure—and it always happens suddenly and unexpectedly—is a serious matter in any institution or place of business. It can mean serious loss and near panic.

The positive and dependable method for being prepared against wired power failure is to install Ready-Power Standby equipment. You are then assured of a continuation of vital electrical service even though normal power is discontinued.

Ready-Power Standby units operate on gasoline, natural gas, butane, propane or diesel fuel.

BE READY WITH

READY-POWER

STAND-BY EQUIPMENT

For complete information please write to

THE READY-POWER CO.
11231 FREUD AVE. • DETROIT 14, MICH.

Manufacturers of Gas and Diesel Engine Driven Generators and Air Conditioning Units; Gas and Diesel Electric Power Units for Industrial Trucks.

HOW TO CUT SEWER REPAIR COSTS!

New, easy-to-use electric sewer-cleaning machine speeds repairs — saves money!

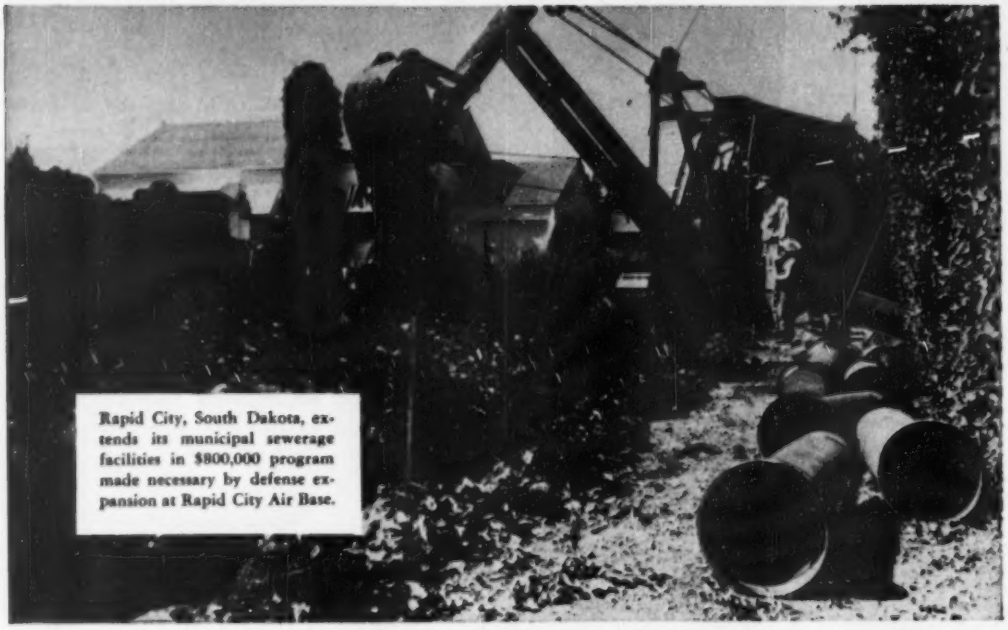
O'Brien Electric Sewer-Kleener in Operation

Any maintenance man can easily and quickly clear root-blocked sewers with this remarkable new O'BRIEN SEWER-KLEENER. Powerful electric motor turns cable and cutting knives to point of stoppage. No manual effort needed. Cleans lines up to 10" in diameter, 200 feet long. Safe operation—no hand feeding of cable necessary. Lightweight; portable.

Write today for free literature.

O'BRIEN MFG. CO.
Dept. AC-4-52
5663 Northwest Highway
Chicago 30, Illinois

CLAY PIPE—*ESSENTIAL* ★ *ECONOMICAL* ★ *EVERLASTING*



Rapid City, South Dakota, extends its municipal sewerage facilities in $800,000 program made necessary by defense expansion at Rapid City Air Base.

15 Miles of CLAY PIPE GO INTO RAPID CITY MUNICIPAL SEWER EXPANSION

Over 15 miles of Vitrified Clay Pipe, in sizes ranging from eight to 33 inches, are being installed to give sewerage facilities to some 900 new homes in Rapid City. Clay Pipe provides these new residents with *permanent* sanitary service—a never-wear-out system that will guard the city's health for years and decades to come.

Clay Pipe is the *only* pipe that's unaffected by acids and alkalies . . . by rust, rot, decay, or sewage gases. It's the one chemically-inert pipe that has *proved* its resistance to chemical action through actual performance in the ground. Don't take chances with substitute sewerage materials. Specify Vitrified Clay Pipe . . . *it never wears out!*

NATIONAL CLAY PIPE MANUFACTURERS, INC.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
206 Connally Bldg., Atlanta 3, Ga.

Vitrified Clay Pipe . . . Specified Wherever Reliable, Performance-Proved Pipe Is Needed

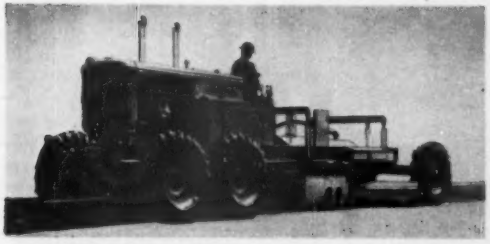
Orlando, Fla. (Air Force Base)	74,000 ft.	Needles, Calif. (Essential Ore)	87,000 ft.
Morrisville, Pa. (New Steel Defense Plant)	300,000 ft.	Hartford, N. Y. (Electronic Plant Expansion)	30,000 ft.
Eynon, Pa. (Gun Fire Control Plant)	120,000 ft.	Willow Springs, Ill. (Jet Engine Plant Expansion)	16,000 ft.
Marion, N. C. (Municipal Sewerage)	32,000 ft.	Limestone, Me. (Air Force Base)	65,000 ft.

Vitrified
CLAY
CLAY PIPE NEVER WEARS OUT!
PIPE

C-452-3

Municipal Purchasing News

Information for officials interested in equipment and services for the construction, operation, and maintenance of municipal utilities



The Model 42 roadmixer, which has a capacity up to 200 tons per hour.

One-Man Travelling Mixer For Street Paving Problems

The question of quality streets at economy prices has a practical solution in the self-propelled, single-pass, road-mixer, according to the Wood Mfg. Co., Box 620, North Hollywood, Calif. The mixer can be used either in soil-cement stabilization or in asphalt-base stabilization and surfacing, using asphalt cutback, emulsion, oil, tar, or other bituminous binders.

Two models that fit into many municipal street-improvement conditions are the Model 42, with a capacity up to 200 tons per hour, and the Model 36, whose capacity is 150 tons per hour. Both are self-propelled, mix thoroughly in one pass, pick aggregate cleanly off the subgrade and blend it with the binder in a pugmill while the binder is hot, and discharges it into a windrow. The model indicates the size in inches of the pugmill.

The City of Long Beach, Calif., has used one of these machines for many years in its pavement program, and recently purchased its second Model 54. It also has demonstrated its usefulness in airport and parking-area construction.

Fulton Bag & Cotton Mills Has Plant in Crystal, Minn.

Norman E. Elsas, chairman of the board of the Fulton Bag & Cotton Mills, Atlanta 1, Ga., announces the opening of the company's modern manufacturing plant at the Village of Crystal, Box E, Minneapolis, Minn.

August Denk, who has been with the organization since 1916, will manage the Crystal operations, as he has in Minneapolis for over 10 years. Sales manager is Gene DuBois, who has been with the company for more than 25 years. Jack C. Baker is superintendent of the plant.

Speaking of the new plant, Mr. Elsas said, "When we planned the Crystal operation, we endeavored to design a plant based on our more than 84 years of experience. This factory will utilize the most modern equipment and will produce the very finest textile products possible."

Porcelain Framed Street Name Signs

Celebrating its 30th anniversary, the Municipal Street Sign Co., Inc., 777 Meeker Ave., Brooklyn 22, N. Y., has developed a new modern size street name sign, utilizing weatherproof porcelain enameled frames.

According to the manufacturer, these new heavy gauge frames completely protect the large 6 by 30-inch porcelain sign plates and merit the company's coverage with its 15-year free-replacement guarantee.

Both the wing and criss-cross style are now in volume production and have already been adopted as standard in Brooklyn, N. Y., and Canton, Ohio, and in many other large cities.

Signs are furnished with necessary frames, fixtures, and hardware ready to assemble and mount. All parts are either non-ferrous or rust-proof.

The company states that its equipment requires no maintenance, relettering, refinishing, dismantling, no interruption of sign service, and they are less expensive because they last longer.

Porcelain framed street name sign, available with necessary frames, fixtures, and hardware ready to assemble and mount.

Lightning Arresters, Transposition Brackets

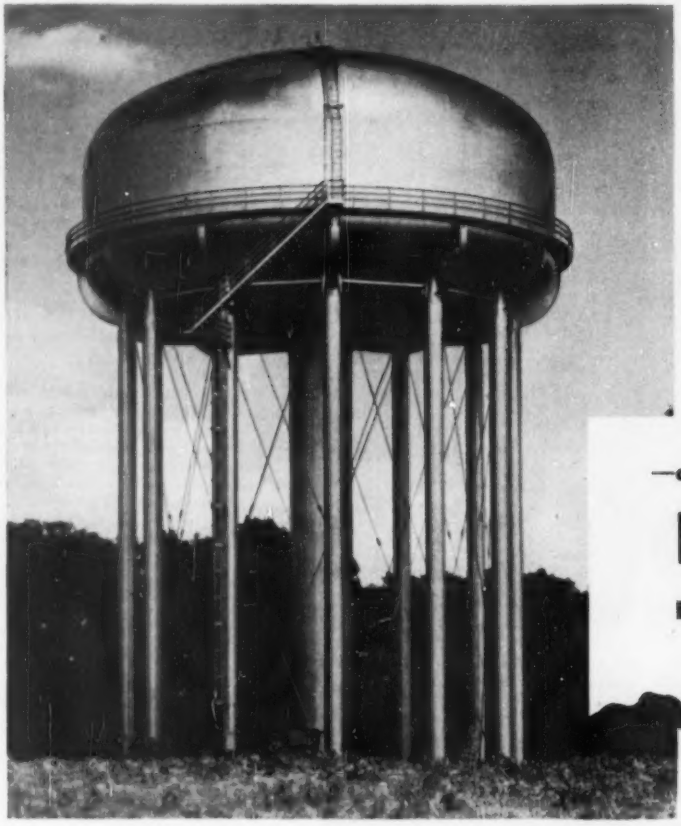
Hubbard and Co., 6301 Butler St., Pittsburgh 1, Pa., announces the addition of a new member in its line of Autogap lightning arresters, and two transposition brackets to its line, designed for the heavy loads imposed by long spans, corners, and winter icing.

Known as No. 2327, the Autogap lightning arrester is of horizontal design and has the twin exhaust to provide maximum surge capacity. It has a maximum voltage rating of 18,000 volts, and may be installed on arm or pole with standard Hubbard mounting brackets.

The transposition brackets, No.'s 9253 and 9264, clamp solidly on standard 3¼ by 4¼-inch arms, with ample "give-and-take" to allow for variations in the dimensions of such arms, and eliminate canting or turning. The brackets are formed of ⅝ by 1½-inch galvanized steel and have 11/16-inch pin holes and ⅝-inch screw holes for attachment with wood or lag screws.

Literature describing this equipment may be obtained by writing to the manufacturer.

The Autogap Lightning Arrester is photographed at upper right, and two models of Transposition Bracket at the lower right.



for

Cincinnati, Ohio

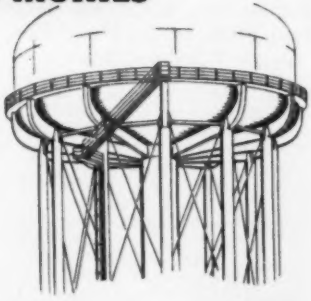
—a million gallon

RADIAL CONE

ELEVATED STEEL TANK

by PITTSBURGH • DES MOINES

The *Radial Cone* design is particularly applicable for elevated tanks of medium to large capacity where *low head range* is an important consideration. • Write for a discussion of the Pittsburgh-Des Moines elevated tank type best meeting *your* requirements.



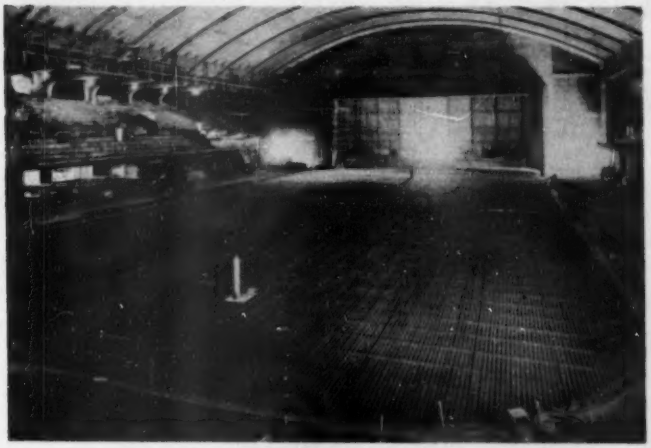
PITTSBURGH•DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH (25)	3412 Neville Island	DES MOINES (8)	913 Tuttle Street
NEWARK (2)	215 Industrial Office Bldg.	DALLAS (1)	1217 Praetorian Bldg.
CHICAGO (3)	1216 First National Bank Bldg.	SEATTLE	520 Lane Street
LOS ANGELES (48)	6399 Wilshire Blvd.	SANTA CLARA, CAL.	619 Alviso Road

Uniform Freezing Surface for This Ice Skating Rink Is Ensured by 42 tons of One-inch Wrought Iron Pipe



It took 42 tons of one-inch wrought iron pipe, made by the A. M. Byers Co., Clark Building, Pittsburgh, Pa., to ensure a uniform freezing surface for the ice skating rink at Onondaga County War Memorial Auditorium, Syracuse, N. Y. The rink, which will be used for sports events, ice shows, and public skating, measures 85 by 195 feet. Seating facilities will accommodate approximately 7,000 persons. The company, a leading manufacturer of wrought iron pipe, has also been active in development of systems that remove snow and ice from outdoor roadway and sidewalk surfaces.

Badger Meter Company President Is Dead

Charles William Wright, aged 60, president of the Badger Meter Mfg. Co., Milwaukee 10, Wis., died on Feb. 14, of a heart attack.

Mr. Wright was born September 27, 1891, at Alexandria, Va., where he spent most of his younger days. He attended Georgetown University, Washington, D. C., and in 1914 moved to Milwaukee. Here he joined the A. O. Smith Corp. At the outbreak of World War I, Mr. Wright enlisted in the U. S. Army and at the cessation of hostilities returned to his position in Milwaukee.

In 1924, after 10 years of service with A. O. Smith, he left and joined the Badger Meter Mfg. Co. In 1929 he was elected president and became a member of the Board of Directors. Improvement of the product and addition to the personnel of expert engineers and production specialists led to the expansion and rapid growth of the company.

During World War II, Badger Meter became one of the largest producers of bomb fuses in the Midwest. Again, after Korea, the company engaged in producing Ordnance material, but this time at a different location, in its new Brown Deer plant—a unit which represents the culmination of a second program of expansion initiated and developed by Mr. Wright.

The present Badger Meter Mfg. Co. is unquestionably the results of the faith, planning, foresight, and drive of the past president. His inspiration will be missed, but his dream will live on in his accomplishments.

Paint Your Pool with Rubber!
Phelan's HYDROFLEX Rubber-Base Finish Gives Beauty and Low-Cost Upkeep
Gordon Park Swimming Pool, Milwaukee, Wisconsin, painted with Phelan's Hydroflex.

Elasticity and durability are built into this special rubber-base finish. It stands up and keeps its beautiful color under tropical sun or winter frost. Easy to clean because slimy algae can't cling to its satiny tile surface.

Pool owners from coast to coast get two seasons' wear from Phelan's Hydroflex — investigate now!

FREE! Folder showing COLOR SAMPLES and full information. Write
PHELAN-FAUST PAINT MFG. COMPANY
St. Louis 11, Mo. Since 1902

Phelan's HYDROFLEX
RUBBER BASE SWIMMING POOL FINISH

AMONG WATER WORKS MEN...

THE
ELLIS PIPE CUTTER
is *Best*
FOR CUTTING LARGE SIZES OF PIPE

No. 01 Cuts Pipe 4" to 8" | No. 1 Cuts Pipe 4" to 12"

Write for circular and price list No. 34AC on our complete line of pipe cutting tools.

ELLIS & FORD MFG. CO.
FERNDALE 20, MICH.

ROADMASTER
Street Sweeper
WIRE

High Scleroscope Rating
Uniform temper.

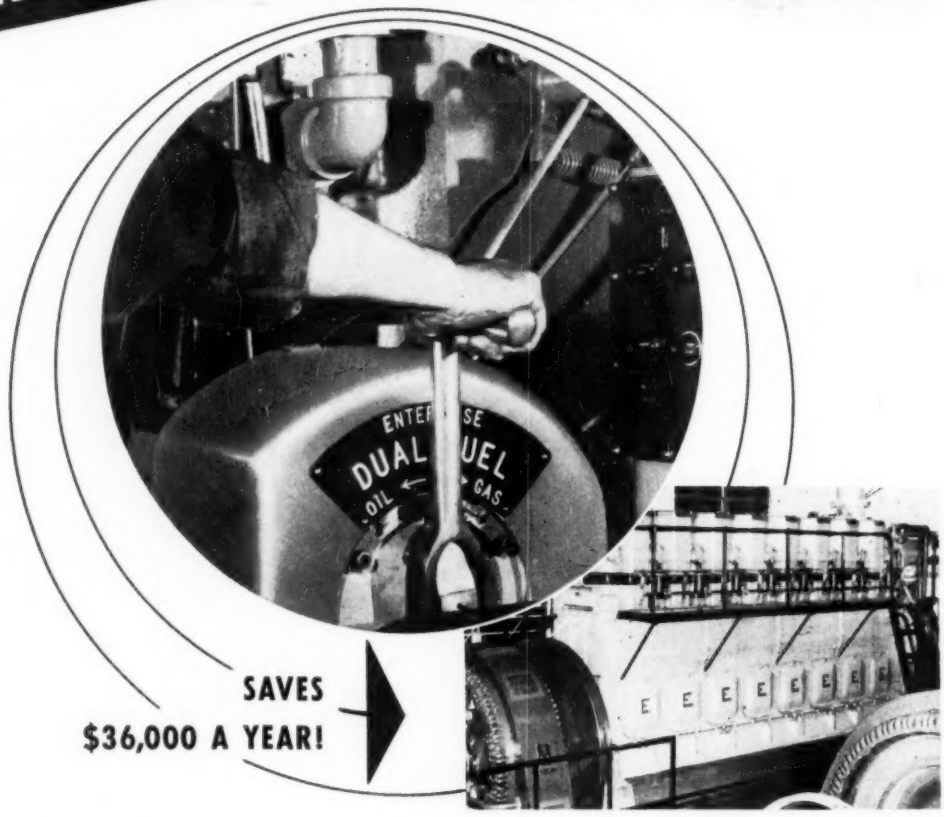
Specially processed for high fatigue — against breakage. Long wearing. Conveniently cut and delivered in 100 and 200 lb. boxes. Prompt shipment from stock of all standard sizes.

This gutter broom wire will prove an economy in your service.

"MORE MILES PER BRUSH"

JOHNSON
Steel & Wire Co., Inc.
Worcester 1, Massachusetts
New York Akron Chicago Detroit
Los Angeles Toronto

PROVED ENTERPRISE *Dual Fuel* Power



Two Enterprise Dual Fuel Units are now in service at the Municipal Utilities plant in Broken Bow, Nebraska. Their combined capacities of 1800 KW more than doubles the capacity of the three straight diesels formerly in operation—*at an estimated saving of $36,000 per year in fuel costs alone!*

Wherever natural or sewage gas is available in sufficient quantities, Enterprise DUAL-FUEL engines provide a maximum operating efficiency at greatly reduced fuel costs.

Initial selection of operating fuel is manual, with smooth and positive changeover from one fuel to the other simplified through Enterprise single-lever control.

Any fluctuation in gas pressure is compensated for automatically by a corresponding increase or decrease of the gas-fuel ratio, thereby *maintaining constant engine speed and load.*

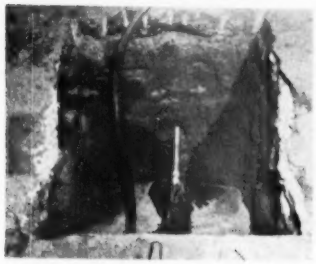
Get full details on quality-built cost-saving Enterprise DUAL-FUEL engines today. Models from 68 to 1755 BHP per unit, generator sets to 1250 KW, turbocharged or normally aspirated.

Enterprise
DEPENDABLE
Diesels

ENTERPRISE ENGINE & MACHINERY CO.
A Subsidiary of General Metals Corporation
18th & Florida Sts., San Francisco 10, California

BOSTON • CHICAGO • FT. WORTH • KANSAS CITY • LOS ANGELES • NEW ORLEANS • NEW YORK • SEATTLE • ST. LOUIS • WASHINGTON, D. C.

Don't Dig Unnecessary Trenches



Drill bit and bore pipe in bell hole at completion of boring operation. The photograph is of the San Bernardino, Calif. Water Department, boring for installation of a water service.

An improved boring tool has been developed that has proved useful for water, power, and other utilities that will make the installation of services easier, according to the Howell Utility Tool Co., 261 Bloomington Ave., Rialto, Calif. The tool can cut through such tough earth formations as decomposed granite, hard-packed sand, and clay. The company states that no extensive trenching is necessary, and the drill can bore long holes that easily accept the inserted pipe.

The tool is designed with a circular shape and rotating action of the hardened steel cutters to provide for self-sharpening; the circular cutters will roll off any pipe or other metal structure, and the metallic sound on the bore pipe gives ample warning to the operators.

The manufacturer points out that heavy, especially-built equipment is unnecessary since present air motor and bore pipe may be used, and where no air motor or compressor is available, a two-man handcrank can be made (the 100-L water hose connector provides water flow) enabling two or more crews to install service lines at the same time. E. C. HOWELL, *Owner*

Refinite Corporation's Sales Vice-President

W. H. Ostenberg, president of the Refinite Corp., Dept. AC-A, Omaha, Nebr., reports the appointment of Norman E. Tucker as vice-president in charge of sales. He also is manager of the Government Contracts Division. Mr. Tucker joined Refinite in 1949, before which time he was general sales manager of the Elgin Softener Corp., Elgin, Ill.

He holds membership in the American Society of Mechanical Engineers, and Professional Engineers Certificates in the States of Illinois, Michigan, and Colorado.

Industrial Products Head For Blaw-Knox Company

W. Cordes Snyder, Jr., president of the Blaw-Knox Co., 2009 Farmers Bank Building, Pittsburgh 22, Pa., announces that Otto G. Schwenk has been named vice-president in charge of industrial products. Mr. Snyder said that this is a new position created within the company and that Mr. Schwenk will have executive responsibilities connected with the manufacturing divisions of the concern.

Mr. Schwenk, before joining Blaw-Knox, had been vice-president in charge of production and a director of The Yale & Towne Mfg. Co., New York, N. Y., prior to which he had been connected with the Weatherhead Co., Cleveland, Ohio.

Chester H. Lehman, for 42 years associated with the Blaw-Knox Co., 2009 has announced his retirement as executive vice-president of the concern.

At the same time, W. Cordes Snyder, Jr., president, reported that Mr. Lehman will continue as a director and vice-chairman of the organization's board. He also will serve in an advisory and consulting capacity to the president.

Joining Blaw-Knox in 1909, Mr. Lehman was first elected a director in 1912, became a vice-president in 1934, and a senior vice-president in 1936. Since 1937, he has served as vice-chairman and executive vice-president.

The company manufactures equipment for street construction and maintenance.

How CLEANLINESS IS AUTOMATIC WITH BENNETT BILT WASTE RECEPTACLES

Everybody is a member of your cleaning department by conveniently locating Bennett Bilt Self-Closing Receptacles to invite their use for economical neatness and sanitation. ***Put them to work for you today.***

ONLY BENNETT BUILT WASTE RECEPTACLES HAVE ALL THESE FEATURES:

- Stainless steel feet
- Extra heavy-gage, corrosion-resistant steel
- All-welded construction
- Smooth surface—no catching or tearing of clothes
- Reinforced rounded corners for strength and appearance.
- Counter-balanced self-closing, independent doors stay closed to provide greater sanitation and reduce fire hazards
- Baked white or green enamel finish

Built for hard usage make these receptacles a natural "buy". Write for fully illustrated catalog.

Below shows how easy it is to remove Osnaberg bags or galvanized liners.

ALSO PRODUCERS OF PAPER TOWEL AND TISSUE PAPER DISPENSERS

Single fold junior paper towel dispensers.

No. 500 and No. 600 tissue paper dispensers for single fold and double fold respectively.

Double fold paper towel dispensers.

BENNETT MANUFACTURING CO., ALDEN, N.Y.

When they're in service 100 Years...

THEY'LL STILL BE FULL OF LIFE!

CLOW

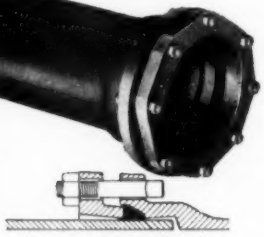
Cast Iron Pipe & Fittings

Long life is the real test of pipe line economy. Clow Cast Iron Pipe and Fittings give you that long life service . . . for a *century and more* . . . and offer the surest way to keep your municipal water supply system at peak efficiency—now and in the years ahead!

City officials throughout the nation have long ago *proved* that it actually costs less to use Clow Cast Iron Pipe and Fittings. They have found that after installation, practically no maintenance, repair or replacement is necessary. So prove to *yourself* that Clow Cast Iron Pipe and Fittings will be a wise investment of public funds!

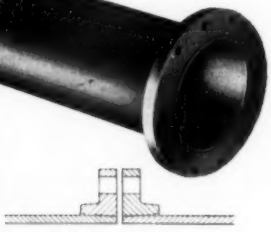
Bell and Spigot Joint

The common bell and spigot type of cast iron pipe joint with standard water bell . . . for poured and calked lead make up.



Clow Mechanical Joint

A time-saving, easily installed mechanical cast iron pipe that reaches the job with all joint materials complete.



Flanged Joint

For exposed pipeline work. Flange dimensions and drilling conform to requirements of A.S.A. Class 125 for flanged fittings and valves.

Clow Cast Iron Pipe Fittings

All types of Clow Cast Iron Pipe Fittings are offered in straight and reducing sizes for use with Bell and Spigot Joint, Mechanical Joint, and Flanged Joint cast iron pipe.

Bell & Bell One-Eighth Bend

Mechanical Joint 90° Elbow — 90° Standard Flanged Elbow

Special Fittings

Clow Foundries are well equipped to produce your special fittings promptly and accurately, to meet particular requirements, and to solve unusual installation problems.

WRITE FOR PRICE AND DELIVERY

Clow Cast Iron Pipe is centrifugally cast—in sizes from 3 to 24", in 18' lengths, and for working water pressures to meet your requirements. Meets Federal Specifications WW-P-421 for Bell and Spigot Cast Iron Pipe for Water. Clow pipe can be easily cut in the field if needed, and drilling and tapping it for services results in superior threads and perfect connections.

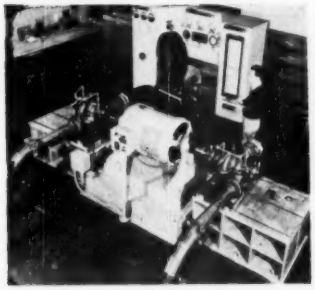
JAMES B. CLOW & SONS

201-299 North Talman Avenue • Chicago 80, Illinois

and their National Cast Iron Pipe Division, Birmingham, Ala.; subsidiaries Eddy Valve Co., Waterford, New York Iowa Valve Co., Oskaloosa, Iowa

CAST IRON

New Testing Station For Centrifugal Pumps



These test stands are permanent installations consisting of a double ended, electric dynamometer mounted on an automatic lift located between two pre-aligned pump bedplates.

The De Laval Steam Turbine Co., Trenton 2, N. J., recently completed a series of newly designed centrifugal pump testing stations which have reduced overall test costs by 75% during a 12-month trial period.

These stations are engineered to give a complete reproduction of performance for pumps of all sizes and ratings. Although they are primarily designed for production testing, they have also proved valuable in research and development processes for new designs, reports the company.

According to the manufacturer, these stations employ the most modern of test techniques based on current standards and offer an accuracy difficult to attain with previous test procedures. A detailed analysis of all test data assembled over the first 12 months' operation has shown a direct reduction in testing time and a saving of man hours that has effectively cut testing costs 25% of the previous established cost. To De Laval and to industry, the new test stations offer a means of obtaining trouble-free, proved pumps that fit given system heads.

To complete their overall program, De Laval engineers are busy building more of these universal test stands for operation later this year. Each station will handle a segment of the complete range of pumps manufactured at the plant.

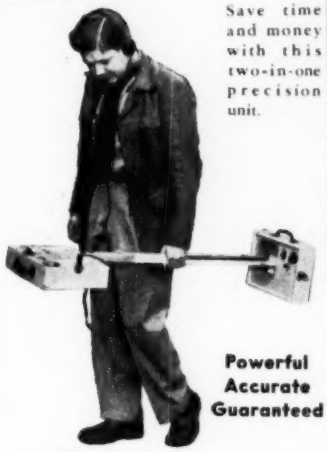
The standard test follows all procedures of the latest hydraulic codes. The test engineer operates the pump at the rated speed of the customer's motor and records data for a minimum of six test points. Readings of pressure, flow and power input are taken only after conditions are stable. By conducting tests in this manner, with laboratory instruments, the calculation of test results can be made without the need of theoretical corrections.

NEW! PATHFINDER

DOUBLE-DUTY DETECTOR

1. Locates pipes, tees and valves
2. Detects leaks

Save time and money with this two-in-one precision unit.



Powerful
Accurate
Guaranteed

Prompt Delivery

Write Today for Complete Details.

PATHFINDER COMPANY
1726 Beverly Drive • Pasadena 7, California

DON'T LET A

POWER FAILURE

catch you unprepared

A sudden power failure—and it always happens suddenly and unexpectedly—is a serious matter in any institution or place of business. It can mean serious loss and near panic.

The positive and dependable method for being prepared against wired power failure is to install Ready-Power Standby equipment. You are then assured of a continuation of vital electrical service even though normal power is discontinued.

Ready-Power Standby units operate on gasoline, natural gas, butane, propane or diesel fuel.

BE READY WITH

READY-POWER

STAND-BY EQUIPMENT

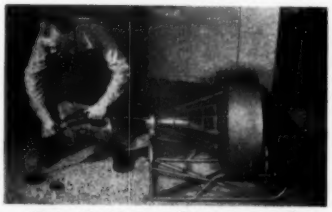
For complete information please write to

THE READY-POWER CO.
11231 FREUD AVE. • DETROIT 14, MICH.

Manufacturers of Gas and Diesel Engine Driven Generators and Air Conditioning Units; Gas and Diesel Electric Power Units for Industrial Trucks.

HOW TO CUT SEWER REPAIR COSTS!

New, easy-to-use electric sewer-cleaning machine speeds repairs — saves money!



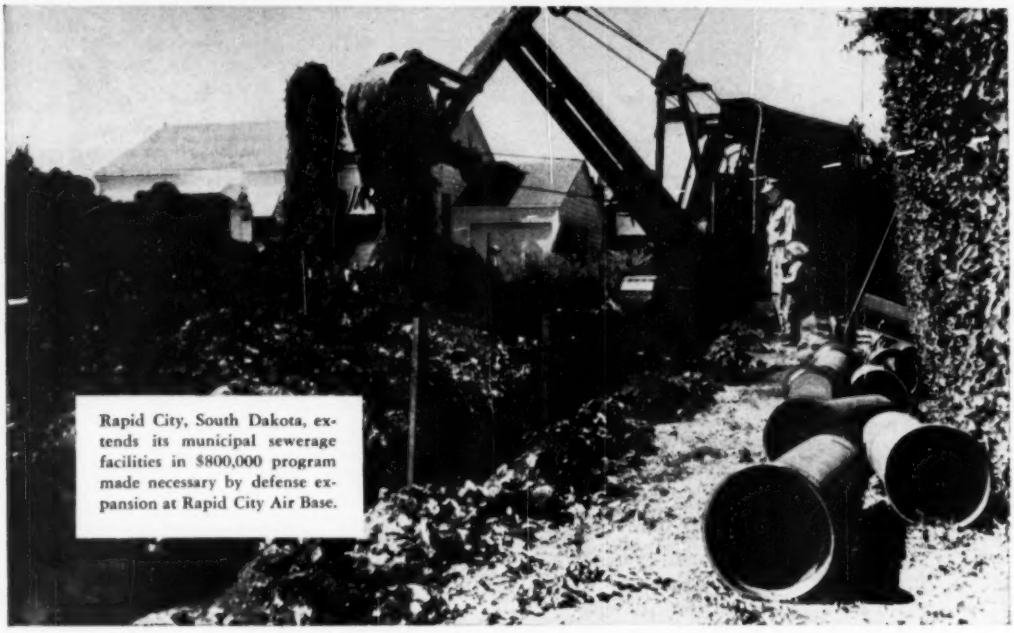
O'Brien Electric Sewer-Kleener in Operation

Any maintenance man can easily and quickly clear root-blocked sewers with this remarkable new O'BRIEN SEWER-KLEENER. Powerful electric motor turns cable and cutting knives to point of stoppage. No manual effort needed. Cleans lines up to 10" in diameter, 200 feet long. Safe operation—no hand feeding of cable necessary. Lightweight; portable.

Write today for free literature.

O'BRIEN MFG. CO.
Dept. AC-4-52
5663 Northwest Highway
Chicago 30, Illinois

CLAY PIPE—*ESSENTIAL* ★ *ECONOMICAL* ★ *EVERLASTING*



Rapid City, South Dakota, extends its municipal sewerage facilities in $800,000 program made necessary by defense expansion at Rapid City Air Base.

15 Miles of CLAY PIPE GO INTO RAPID CITY MUNICIPAL SEWER EXPANSION

Over 15 miles of Vitrified Clay Pipe, in sizes ranging from eight to 33 inches, are being installed to give sewerage facilities to some 900 new homes in Rapid City. Clay Pipe provides these new residents with *permanent* sanitary service—a never-wear-out system that will guard the city's health for years and decades to come.

Clay Pipe is the *only* pipe that's unaffected by acids and alkalies . . . by rust, rot, decay, or sewage gases. It's the one chemically-inert pipe that has *proved* its resistance to chemical action through actual performance in the ground. Don't take chances with substitute sewerage materials. Specify Vitrified Clay Pipe . . . *it never wears out!*

NATIONAL CLAY PIPE MANUFACTURERS, INC.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
206 Connally Bldg., Atlanta 3, Ga.

Vitrified Clay Pipe . . . Specified Wherever Reliable, Performance-Proved Pipe Is Needed

Orlando, Fla. (Air Force Base)	74,000 ft.	Needles, Calif. (Essential Ore)	87,000 ft.
Morrisville, Pa. (New Steel Defense Plant)	300,000 ft.	Hartford, N. Y. (Electronic Plant Expansion)	50,000 ft.
Eynon, Pa. (Gun Fire Control Plant)	120,000 ft.	Willow Springs, Ill. (Jet Engine Plant Expansion)	16,000 ft.
Marion, N. C. (Municipal Sewerage)	32,000 ft.	Limestone, Me. (Air Force Base)	65,000 ft.

Vitrified CLAY PIPE — CLAY PIPE NEVER WEARS OUT!

C-652-3

General Sales Manager Of Shunk Mfg. Co.

J. D. Newkirk has been appointed general sales manager of the Shunk Mfg. Co., Bucyrus, Ohio. He replaces J. Austin Carrington, who resigned to become affiliated with a family-owned enterprise in Indianapolis.

J. D. Newkirk

Associated with Shunk in a direct sales capacity for three years, Mr. Newkirk now will direct all sales activities which include the Blade and Moldboard Division and the new Contract Division which produces custom steel fabrications.

Traffic Paint Striper Makes Single, Dual Lines

Of particular interest to maintenance men in municipal government, public utilities, and construction, is the announcement by the Line Marker Division of Universal Yonkers Corp., 137 Alexander St., Yonkers 2, N. Y., of a new model of the Universal Controlled-Flo Traffic-Line Paint Striper which makes dual as well as single lines.

According to the manufacturer, the machine's performance lightens the work of maintenance men, because it is gravity fed and requires no power unit. It provides a mobile, quiet and simple operation, and is well suited to line street crossings, roads, highways, construction projects, and traffic safety zones.

The company states that the machine also is effective in lining outdoor areas and indoor installations, and for lining hard-surfacing parking lots. The all-metal sled-type spreader accommodates striping or zone paint of any standard make.

Noiseless in operation, it throws off no spray dust; a distribution apron receives the paint from the gravity line, feeding it evenly to finger rollers which spread the fluid. The equipment can be employed on such smooth surfaces as macadam, concrete, asphalt, or wood.

Gravity-fed Traffic-Line Paint Striper

Proportioning Weir Tanks For Solutions or Suspension

The Omega Machine Co., 345 Harris Ave., Providence 1, R. I., has developed a line of proportioning weir tanks for solutions or suspensions. It reports that these devices consist of a specially contructed tank incorporating a stilling chamber, an accurately machined rectangular weir, two outlet chambers, and a flow spitter, so arranged that the total flow of solution or suspension to the two outlets can be readily divided into any proportion.

The flow spitter is graduated into percent of total flow, is instantly adjustable, and has no moving parts. It may be fitted with a pneumatic or electric operator and is suitable for controlling the flow of liquids or suspensions in proportioning systems or automatic pH control systems.

Are You—

WASTING WATER?

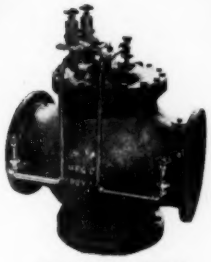
ELIMINATE WILFUL AND UNNECESSARY WASTE BY INSTALLING ROSS VALVES TO EFFICIENTLY REGULATE DISTRIBUTION PRESSURES.

PRESSURE REDUCING VALVE

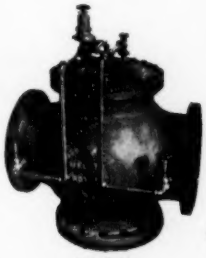
Maintains constant reduced pressure at downstream side of valve.

ROSS

1879



COMBINATION PRESSURE REDUCING AND BACK PRESSURE VALVE



BACK PRESSURE VALVE

Maintains constant back pressure at upstream side of valve.

OTHER ROSS PRODUCTS:
HYDRAULIC AND ELECTRIC CONTROLLED VALVES, ALTITUDE VALVES — FLOAT VALVES — RELIEF VALVES STRAINERS — HYDRAULIC BOOSTER PUMPS AND SPECIALTIES

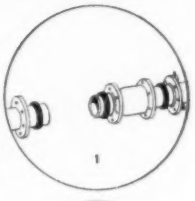
Write for Our Catalog No. 50

ROSS VALVE MFG. CO., Inc.

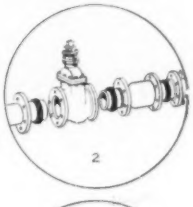
8 OAKWOOD AVENUE **TROY, N. Y.**

If you have to install a valve in a hurry--with an eye toward economy....

...specify EDDY
Cutting-in Valves and Sleeves



After excavation and removal of section of pipe, glands and gaskets are placed on pipe and sleeve. The sleeve is then pushed into position.



Valve is placed between pipe-end and sleeve, and pushed home against pipe. Sleeve is seated into bell of valve.

Glands, gaskets, bolts and nuts are then assembled at the 3 joints and tightened, using a ratchet wrench only.

Since 1849 EDDY For Long Service

EDDY
VALVE COMPANY
A Subsidiary of James B. Clow & Sons
WATERFORD, NEW YORK

Starting with step "1" above, two men with a ratchet wrench can install an Eddy Mechanical Joint Cutting-in Valve and Sleeve on an existing pipeline in less than 25 minutes. Every joint is bottle-tight under pressure, without caulking or lead-melting. Thus, the work can be done in any kind of weather, or in a flooded trench. Valves meet AWWA specifications; are available in 3 to 12" sizes for sand-cast and centrifugally-cast iron water pipe. Stock up now, for speedy installations.

Sign Bracket Fits Poles Of 1½ to 2-Inch Diameter

A. J. Gerrard & Co., 1952 Hawthorne Drive, Melrose Park, Ill., reports that it produces a new special sign bracket which simplifies fastening signs securely and attractively to small diameter poles. A standard Steelbinder strapping tool is the only device needed to secure the new bracket to any pole of 1½, 1¾, or 2 inches, or larger diameter.

According to the manufacturer, a solid, secure attachment is assured by the fact that, regardless of pole diameter, the strap securing the bracket is in contact with at least 67% of the pole circumference. The company states that neither high winds nor jolts of sufficient force to tip over the pole will dislodge a sign secured by the new bracket. Removal from the pole is accomplished in a few seconds by simply severing the strap with a strap cutter.

The concern reveals that tests on small-diameter sign poles for highway advertising, parking meters, public parks, playgrounds, beaches, and other places, indicate that the new bracket combines neatness, permanence, safety, easy installation, and low cost.

Western Sales Manager For Oliver United Filters

James B. Hoxie has been named Western Division sales manager, with headquarters in Oakland, Calif., it is reported by the Oliver United Filters Inc., 33 W. 42nd St., New York, N. Y. His territory comprises the Mountain and West Coast states.

J. B. Hoxie

With the company for 20 years, Mr. Hoxie succeeds Philip J. McGuire, who was appointed director of research and development.

Manufacturer of industrial filters, pumps, and allied equipment, Oliver United Filters has national sales offices in New York, Chicago, and Oakland, and sales manufacturing facilities throughout the world.

YOU CAN BE *Sure* WHEN YOU USE *Shuredry*

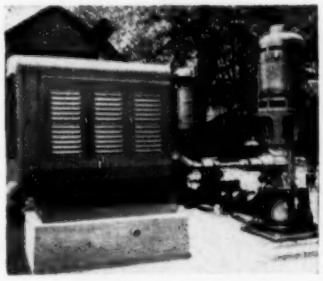
. . . Yes, sure that you're getting a salvage cover that is lighter, easier to handle — extra pliable so that it can be spread more quickly. And, Shuredry Salvage Covers are pressure impregnated with the exclusive Fulton dry treatment — top every test for water penetration and seepage! They're approved by National Board of Fire Underwriters and by Factory Mutual Laboratories. You're SURE to reduce fire losses with SHUREDRY Salvage Covers.

SEE YOUR FIRE EQUIPMENT DEALER

Fulton BAG & COTTON MILLS

Atlanta • St. Louis • Dallas • Denver • Minneapolis • New Orleans
Kansas City, Kans. • Los Angeles • New York City • Winter Haven, Fla.

24 Hour POWER Service



JOHNSON Combination DRIVES

CONTINUOUS WATER SUPPLY . . . protects the public health and reduces fire hazard.

FLOOD DAMAGE . . . insures 24 hour operation of drainage pumps in any emergency.

RESERVE POWER . . . will transmit additional power to meet emergency requirements.

SEWAGE . . . the ideal Drive for continuous 24-hour constant service.

ADAPTABLE . . . available in a number of sizes, types and ratios to meet varied application.

WORLD WIDE ACCEPTANCE . . . in recognition of dependable service, economy of operation and maintenance. Hundreds in use by municipalities.

INVESTIGATE NOW . . . get the facts on the Johnson Right Angle Gear Drive. Send for illustrated catalog.

PHOTO: Installation at Red Bank, New Jersey. Courtesy Layne-New York Company.

JOHNSON GEAR AND MANUFACTURING CO.
"45 years of Engineering Service"
8th & Parker Streets • Berkeley 10, Calif.

4 major reasons why Permutit is

WATER CONDITIONING HEADQUARTERS

WATER CONDITIONING HEADQUARTERS for 40 years, The Permutit Company pioneered in the application of ion exchange in water treatment. Permutit's *complete* line of water conditioning equipment is engineered and constructed to meet all needs.

1. ***PRECIPITATORS***—A reaction and settling tank requiring less space, less chemicals and less time than previous designs. Permutit Precipitator softens water . . . removes impurities . . . lowers alkalinity content. Available in sizes having daily capacities varying from *one thousand* to *ten million* gallons.

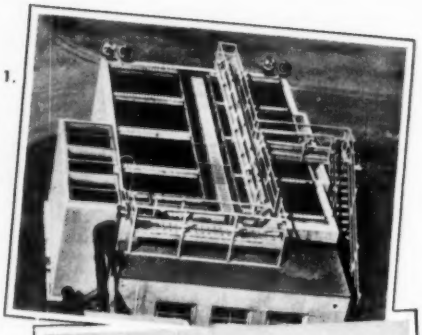
2. ***ION EXCHANGERS***—Hardness in municipal water supplies is objectionable because of its scale-forming, soap-destroying properties. Hardening elements can be *simply* and *cheaply* removed by passing water through tanks containing Permutit Zeolites. Water softening occurs when Zeolites attract the hardening ions—calcium and magnesium—and exchange them for sodium ions.

3. ***SPIRACTOR***—A *space-saving* cold lime-soda water softener with a new principle—*catalytic precipitation*. Hard water plus chemicals enter shell and swirl upwards through catalyst granules. Precipitates deposit on granules by accretion . . . fall to bottom . . . are drawn off and *easily* disposed of. *Total reaction time is 8 minutes.*

4. ***MONOCRETE UNDERDRAIN***—Non-corrodible monolithic construction is rigid and inexpensive. Large laterals and header consist of conduits cast in concrete . . . assure uniform collection and distribution of water. Laterals are formed by inflatable rubber tubes which are removed after concrete has set. Porcelain extension stems, containing porcelain strainers, extend from header and laterals to concrete surface.

Write for further information on these and other types of water conditioning equipment to The Permutit Company, Dept. AC-4, 330 West 42nd Street, New York 36, N. Y., or to Permutit Company of Canada, Ltd., 6975 Jeanne Mance Street, Montreal.

1.



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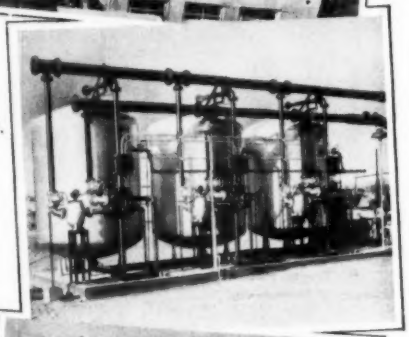

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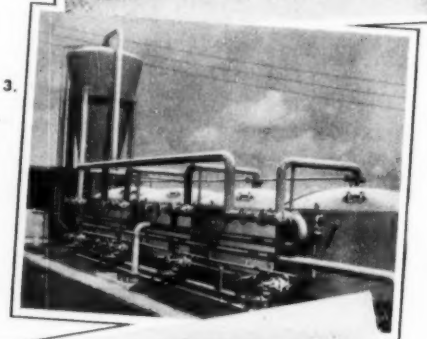

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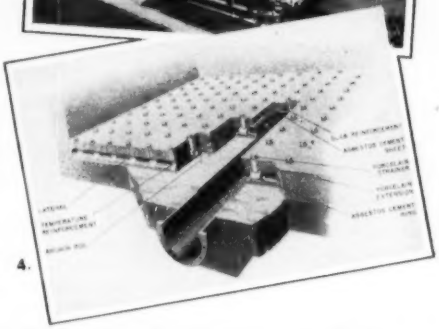


WATER CONDITIONING HEADQUARTERS
FOR 40 YEARS

PERMUTIT

T. O. Liebscher President Of the Le Roi Company

T. O. Liebscher has been named president of the Le Roi Co., Milwaukee 14, Wis., manufacturer of portable air compressors, tractor - compressors, and rock drills for the construction and mining industry. The appointment was made at a Board of Directors' meeting. G. J. Hamm was named secretary-treasurer; C. W. Decker, assistant secretary, and J. R. Gavigan, assistant treasurer.

T. O. Liebscher

Mr. Liebscher started with the firm in April 1940 as assistant secretary and assistant treasurer, and then became secretary-treasurer. In 1946 he was elected to the Board of Directors and became executive vice-president in 1950.

Among the products developed by Le Roi for the construction industry are the 105 Tractair tractor-compressor and a number of Tractair-Rock Drill combinations.

New Northeast Sales Head

The Pittsburgh Coke & Chemical Co., Grant Building, Pittsburgh 19, Pa., reports the appointment of Robert de Laski as northeastern representative of its Protective Coatings Division, with offices in the Empire State Building, New York, N. Y.

Formerly with the W. A. Briggs Bitumen Co., Mr. de Laski has been connected with the application of hot and cold tar coatings in the marine and industrial fields for the past five years.

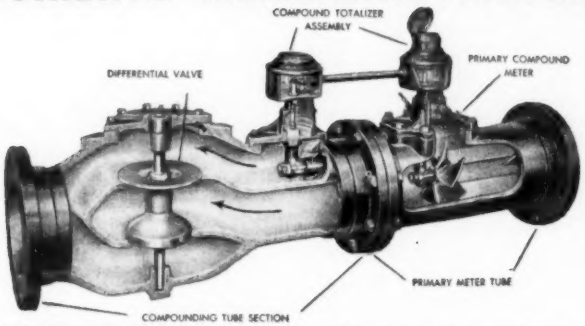
Gar Wood Appoints Robertson in Charge Of Government Sales

According to an announcement received from E. R. Leeder, executive vice-president, Gar Wood Industries, Wayne, Mich., W. C. Robertson, formerly vice-president in charge of export, has been named vice-president in charge of government sales and relations.

Mr. Leeder reports that the move placed Gar Wood government sales and relations under the direct supervision of one of the corporation's top executives. Mr. Robertson's new duties are an important step in the company's long-range planning to improve and perfect its operations.

E. B. Hill, formerly vice-president in charge of domestic sales, becomes vice-president of domestic and export sales. Export headquarters, until now in New York, will be located in Wayne.

SPARLING MAIN-LINE METERS



COMPOUNDS *with Flow-Ranges as Wide as* 1 to 125

- Accurate Measurement on Low Flows as well as on High Flows
- One Totalizer and no sharp cut-over point
- Conserve Pressure—See Bulletin 311 for low-loss-curves
- Sizes 6-inch to 36-inch, with Flanged, Bell and Spigot ends

Quotations and Bulletin 311 come at your request

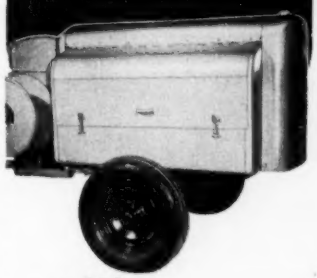
SPARLING METER COMPANY INCORPORATED

LOS ANGELES 54 ..... Box 3277
CHICAGO 8 ..... 1500 South Western Avenue
SEATTLE 1 ..... 1952 First Avenue
NEW YORK 17 ..... 101 Park Avenue
KANSAS CITY 6 ..... 6 East 11th Street
626 Broadway ..... CINCINNATI 2
6 Beacon Street ..... BOSTON 8
726 Reserve Loan Life Bldg. ..... DALLAS 1
66 Luckie St., N.W. ..... ATLANTA 3

Now—more than ever!

smith

the *money-saving* COMPRESSOR



smith MODEL 105-P

Lower first cost! Lower upkeep!

In high-cost times, look to the Smith for compressor savings! Delivers 105 cu. ft. per minute—combines heavy duty with light weight; easily portable. Powered with the Chrysler Ind. 15 Industrial engine — 6 cyl., 4" bore, 5" stroke, 377 cu. in., 3" crankshaft, 7 main bearings, sodium cooled valves and Stellite valve seats for heavy duty, long life. Compressor valves—stainless steel disc type with Manganese Bronze seats. Improved type pilot valve and simplified control . . . *Write for literature and prices.*

ALSO the new SMITH 70-P AIR COMPRESSOR

Gordon Smith & Co.
Incorporated

425 College Street
BOWLING GREEN, KY.

Yardley PLASTIC PIPE for water or waste disposal systems

Whatever the need . . . for cold water or corrosive liquids, suction or discharge . . . there's a Yardley Plastic Pipe for the job.

Made from rigid or flexible light-weight material. Acid and alkali resistant. Won't rot, rust or corrode. Produced in a full range of pipe and tubing sizes, ½" through 6". Complete line of standard fittings and adapters. Easier to install, more economical to handle.

Send for chemical resistance charts.

M-6 with cement-type sleeve coupling.

M-2 flexible type.

M-6-T/C with male adapter

M-1 with insert adapter attached.

YARDLEY PLASTICS CO.

142 Parsons Ave. · ADams 9315

Columbus 15, Ohio

YARDLEY M-1 and M-2 FLEXIBLE PIPE SPECIFICATIONS

PIPE SIZE	NOMINAL O. D.	NOMINAL I. D.	CALCULATED B. P. P. S. I.	APPROXIMATE WT. PER FT.	NORMAL SHIPPING LENGTHS
½"	.820	.620	540#	.092	400' Coils
¾"	1.080	.840	350#	.141	400' Coils
1"	1.340	1.100	200#	.179	300' Coils
1¼"	1.640	1.360	200#	.263	300' Coils
1½"	1.900	1.610	200#	.357	250' Coils
2"	2.375	2.067	170#	.434	200' Coils
3"	3.500	3.068	165#	.899	100' Coils
4"	4.500	4.026	150#	1.220	25' Straight
6"	6.675	6.065	115#	2.400	25' Straight

YARDLEY M-6 AND M-6-T/C RIGID PIPE SPECIFICATIONS

PIPE SIZE	APPROXIMATE WT. PER FT.	NOMINAL I. D.	NOMINAL O. D.	CALCULATED BURST PRESSURE P.S.I. AT 80° F.
½"	.053	.476	.600	700
¾"	.080	.715	.855	625
1"	.138	.970	1.140	550
1¼"	.20	1.230	1.420	525
1½"	.32	1.510	1.730	490
2"	.45	2.00	2.250	400
3"	.555	3.000	3.250	375
4"	.880	4.000	4.300	342
6"	1.940	6.000	6.440	335

M-6 and M-6-T/C recommended for working pressures up to 20% of calculated bursting pressures where temperatures do not exceed 125°. For M-1 and M-2 working pressures, use 60% of calculated burst.

New Hough Representative

Carl W. Tuohey has been appointed as representative of The Frank G. Hough Co., Libertyville, Ill., for Hough Sales District Two, comprising the states of New York, New Jersey, Pennsylvania, Virginia, Delaware, West Virginia, and New England. He will work with the Hough distributors in these states in the application of Hough Payloader tractor-shovels to the contracting, public works, and other fields.

C. W. Tuohey

Mr. Tuohey joined the company in June 1950. He fills the vacancy created by William Cornell, who was recalled to active service with the U. S. Marine Corps.

Engineering Representative For Universal Concrete Pipe

Byron A. Bledsoe has become an engineering representative at the Atlanta office of the Universal Concrete Pipe Co., 297 S. High St., Columbus 15, Ohio. The announcement was made by H. X. Eschenbrenner, president.

C. Ray Wilhelm is manager of the Atlanta plant which is located at 1270 Milton Ave., S.E., and manufactures all sizes of concrete pipe. He is assisted by LeRoy Epperson and Mr. Bledsoe.

Motorola Communications Is Moved to New Home

Paul V. Galvin, president of Motorola, Inc., has announced the relocation of the company's Communications and Electronics Division. Formerly operating in the main radio and television plant at 4545 W. Augusta Blvd., Chicago 51, Ill., the 2-way radio division is now producing from new quarters, immediately adjacent, at 4501 W. Augusta Boulevard.

The new building, providing 200,000 square feet of plant and office space, is the former home of Tropic Aire and the Greyhound Bus Co. offices and factory. It has been renovated to consolidate exclusively all activities of the Communications and Electronics Division.

Entrance to the Motorola Communication and Electronics Division's new home.

Better light in the nation's capital!

AMPLEX STREET LIGHTING LAMPS

Amplex Street Lighting Lamps bring improved lighting on Constitution Ave. (above) and on approach to So. Capital St. Bridge (right). Installation made by Potomac Electric Power Company.

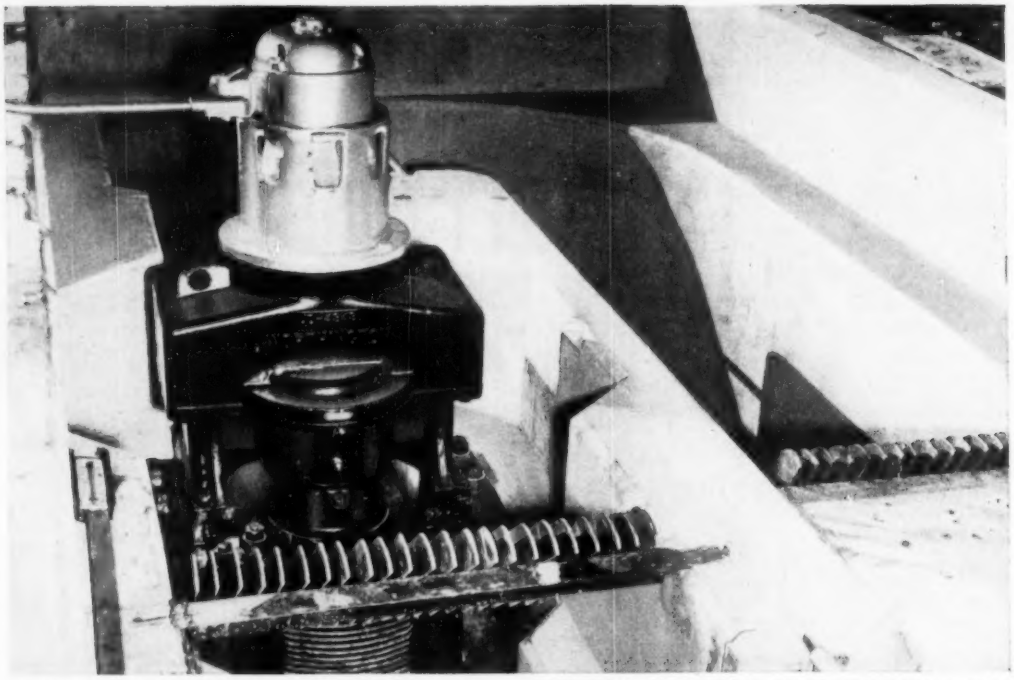
FROM ONE COAST TO THE OTHER, Amplex Street Lighting Lamps are the fastest-growing choice of cities and utilities. Experience shows that these lamps give outstandingly superior service . . . and so they should! They're designed and premium-built to withstand the vibration and jolts of fast-moving traffic . . . to burn longer and to maintain their high light output.

In the Amplex line there's a street lighting lamp of the right type and wattage for every purpose. And for truly maximum life and dependability there's nothing equal to Amplex *Weatherproof Bulbs*. They're made of moisture-resistant "hard glass" that survives the severest climatic conditions and cuts service costs to new lows.

It will pay you to get all the facts about Amplex Street Lighting Lamps. Just write **Amplex Corporation, Dept. K-4 111 Water St., Brooklyn 1, N. Y.**

AMPLEX

Sealed-Beam Reflector Lamps, Colorbeam Lamps, Spotlites and Floodlites, Industrial Infra-Red Heat Lamps, Vibration and Rough Service Lamps, Street Lighting Lamps, Traffic Signal Lamps, Incandescent Lamps, Fluorescent Tubes, Display Accessories.



WORTHINGTON COMMINUTOR IS EASILY INSTALLED TO HANDLE LARGE VARIATIONS IN FLOW like this one at the Madison-Chatham (N. J.) Sewage Treatment Plant. Maximum wet-weather flows are occasionally as high as five times the average design dry-weather flow. An overflow screen is installed on top of the comminutor to screen flows in excess of the comminutor's capacity. Screenings are later raked down into the comminutor during period of normal flow. The overflow screen makes the comminutor independent of the by-pass on right which may later be used as a channel for a second comminutor. Plant Superintendent is Edward P. Molitor.

Madison-Chatham, N. J., installation proves adaptability of Worthington COMMINUTOR

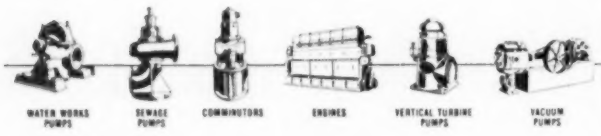
Typical example of the adaptability of the Worthington comminutor is the story of this installation at the Madison-Chatham Joint Meeting Sewage Treatment Plant in Chatham, N. J.

Engineers everywhere especially like the Worthington comminutor because:

- It can be readily installed in new or existing straight-flow rectangular channels.
- Cutter-racks are quickly removable for sharpening or replacement.
- It may be flooded without damage because it's protected by a mercury seal.

Worthington's public works specialists are ready to work with your community's engineer in solving screening problems—as well as other problems in sewage, water works, or municipal power generation. Write, stating details of problem or requesting Comminutor Bulletin W-2010-B3 to *Worthington Pump and Machinery Corporation, Public Works Division, Harrison, N. J.*

W.2.5



All Major Public Works Equipment Under One Responsibility

WORTHINGTON

Public Works Equipment

Deer Park, Ohio, Buys Fire Truck

Deer Park, in the metropolitan Cincinnati, Ohio, area, has this new International 750-gallon pumping engine with 300-gallon booster tank built by the American Fire Apparatus Co., P. O. Box 1024, Main St. Road, Battle Creek, Mich. The L-190 series truck is equipped with a Super Red Diamond 450 engine. The 175-inch chassis bears booster hose reels with electric rewind.

Eastern Distributor For Safety Traffic Cone

The Western Marketing Service, now in its new and enlarged quarters at 149 Highwood Ave., Weehawken, N. J., has been appointed eastern distributor for the Safety Traffic Cone Corp., 949 N. Vignes, Los Angeles 12, Calif., manufacturer of the square-base rubber traffic cone.

C. R. Fitzsimons, in an interview during the recent Highway Officials' convention in Atlantic City, N. J., stated that facilities have been completed for distribution of the new cone, which is 18 inches high, with a base measuring 10½ inches square.

HIGHWAY
'Super'
LINE MARKER
Stripe up to 4 lines at one time!

Latest development in street & highway striping equipment

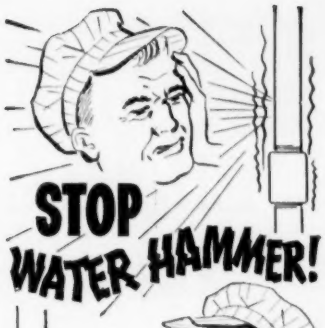
HAS MANY USES
USED for traffic line marking
—for many types of paint spraying
—for crosswalk and curb marking
—effectively for roadside weed control
—in painting bridges, guard rails, buildings
—also for mosquito control

Write for Circular

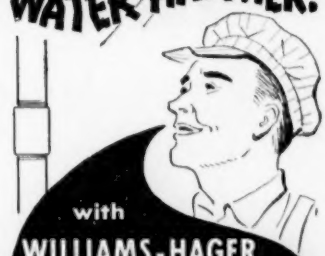
Manufacturers of Striping Equipment

SPECIAL FEATURES
Proven Performance thru years
All Steel Construction
One or Two Color Combinations
Any Combination of Skip Stripe up to 4 lines at one time
Quickly and Easily set for 2 up to 12-inch lines
Equipped for wet or dry reflective coating
All Controls within easy reach
No Shoes, guides, rollers or skids to replace
No part of equipment other than tires in contact with road surface

General Traffic Controls Inc.
P. O. Box 1373 TACOMA, WASH.



STOP WATER HAMMER!



with WILLIAMS-HAGER flanged *Silent check* VALVES

You can install Williams-Hager flanged Silent Check Valves in your water system in any position . . . horizontal, angular, vertical with flow upward or downward . . . and put an end to costly and annoying water hammer. Easy to install or reseat without special tools, they are durable and compact with easy accessibility and low friction. Available in standard pipe sizes from 1" to 20". Investigate the many features of these valves . . . and save!

CHECK VALVES

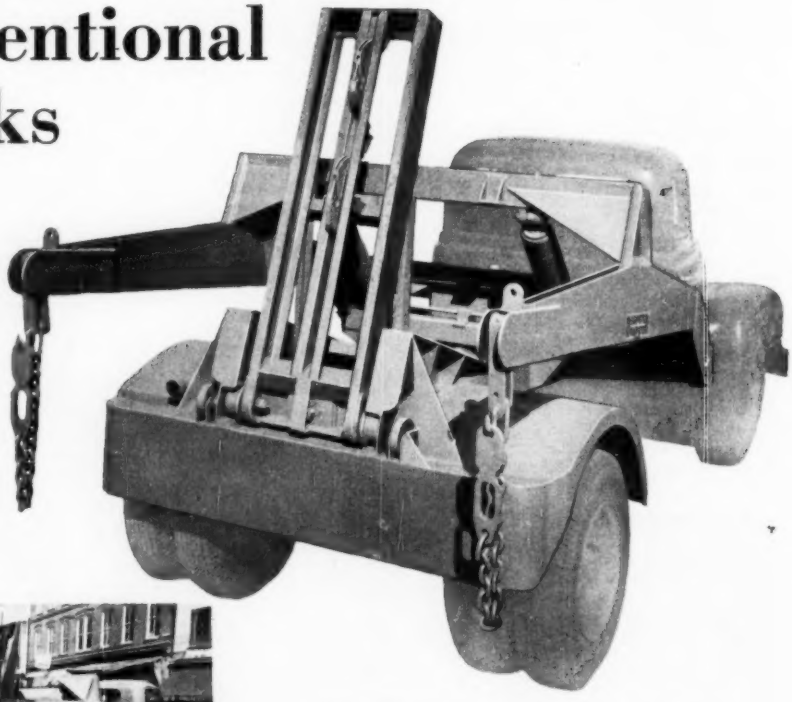
Write for Bulletin WH 851

Write today for your copy of this informative bulletin on Water Hammer, its Cause, Effect and Control in Piping Systems.

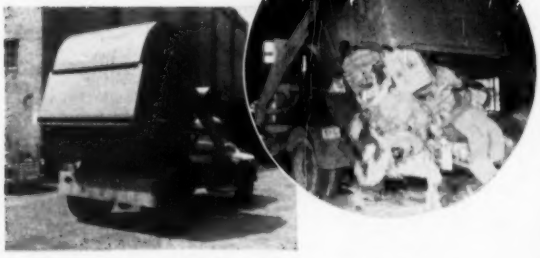
THE WILLIAMS GAUGE CO.
3013 PENNSYLVANIA AVE. • PITTSBURGH 33, PA.

The DEMPSTER DUMPSTER® Rubbish Collection System

Eliminates 3 to 5 Conventional Trucks



THREE STAGES of quick pick-up, hauling and dumping are shown while Dempster-Dumpster is at work in Norfolk, Va.



One truck-mounted Dempster-Dumpster picks up, hauls and empties, one after another, a multiple number of detachable containers . . . eliminating 3 to 5 conventional trucks and crews. Containers are spotted at hospitals, schools, business establishments, etc. and loaded by the user. Container sizes range up to more than three times the capacity of the average dump truck body. For low cost, efficient and sanitary bulk rubbish collection, your city needs the Dempster-Dumpster System. Manufactured exclusively by Dempster Brothers, Inc.

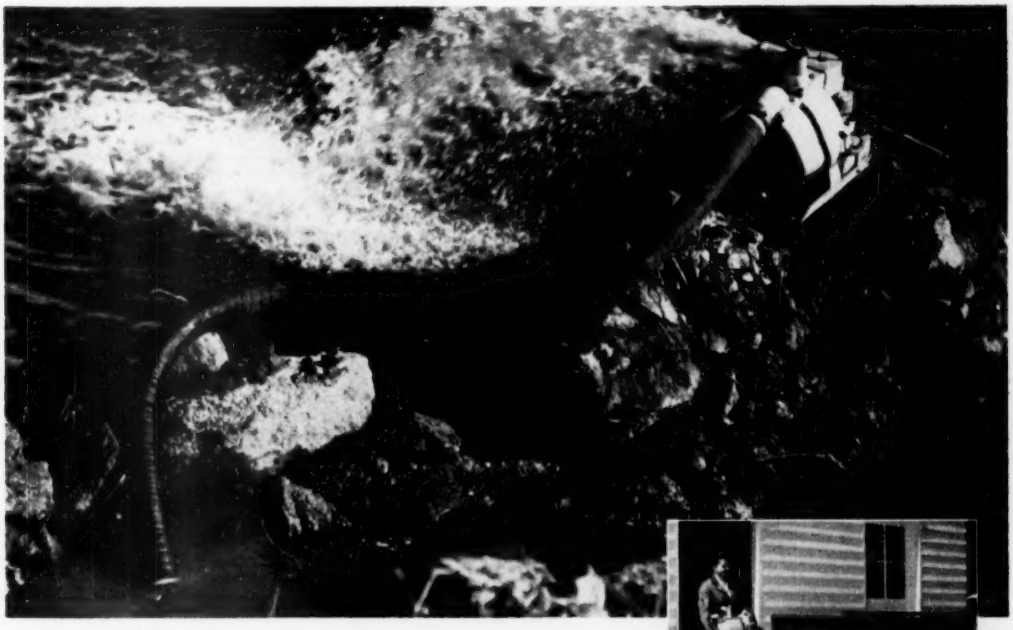
One Dempster-Dumpster Services All Containers . . . All Designs. . . All Sizes

DEMPSTER BROTHERS, 842 Dempster Bldg., Knoxville 17, Tenn.

ACTION!

When You Need It — Where You Need It

HOMELITE *CARRYABLE* PUMPS



The same thing happens every spring. Thaws and floods move into the scene... and when they do you want action, *fast pumping action.*

No pump will give you quicker action or better action than a Homelite Gasoline Engine Driven Pump. Small and compact, it presents no transportation troubles. One man can carry it and set it up quickly *any place you need it.* With the fastest automatic self-priming, a Homelite pumps up to 15,000 gallons. It keeps seepage at strainer level automatically. Has a guaranteed 28 foot suction lift . . . is non-clogging and completely weatherproof.

See it in action...on your job. Write for a free demonstration.

Homelite Field Service
When you need it — Where you need it
All over the country, Homelite Factory Branches are ready, willing and equipped to give prompt service in their shops or in the field as you need it.

Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE
CORPORATION
104 RIVERDALE AVENUE • PORT CHESTER, N. Y.

Where only the best is a bargain!

On a really tough hauling job, a truck's either got it, or it hasn't.

You either make money or you lose it. Only the *best* truck engineered for the job is a bargain for the operator.

That's why you see so many Internationals on tough jobs. That's why you'll be money ahead to see your International Truck Dealer or Branch and get the *best* truck engineered for your job. Why not make it *soon?*

INTERNATIONAL HARVESTER COMPANY · CHICAGO

Get the facts about International's features:

- All-truck engines—exclusively for truck work—built in the world's largest truck engine plant.
- The "roomiest, most comfortable cab on the road"—the Comfo-Vision Cab designed by drivers for drivers.
- Super-steering system—more positive control, easier handling and 37° turning angle.
- Traditional truck toughness that has kept International first in heavy-duty truck sales for 20 straight years.
- 115 basic models . . . everything from ½-ton pickups to 90,000 lbs. GVW ratings.
- America's largest exclusive truck service organization.

International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

INTERNATIONAL TRUCKS

"Standard of the Highway"

H. L. Wheeler J. W. Crawley

Sales Representatives For Hays Mfg. Co.

Announcement has been made by the Hays Mfg. Co., Erie, Pa., of the appointment of Henry L. Wheeler as sales representative in the New York-New Jersey territory, and James W. Crawley as sales representative in the area consisting of Kansas, Missouri, Oklahoma, and Arkansas.

Mr. Wheeler succeeds Robert Hutchings, who has been promoted to assistant sales manager, in charge of the company's Industrial Sales Division.

Mr. Crawley had been with the Texas Water Co. at Fort Worth.

Movie on Radio Communications and Its Role in Civil Defense

Radio communications play a vital role daily in the lives of all Americans. However, the operations and importance of this electronic "tool," which has now added civil defense to its broad field of applications, are little understood or appreciated by the public.

The General Electric Co., Electronics Park, Syracuse, N. Y., through the use of a new motion picture entitled, "And a Voice Shall Be Heard," dramatizes the subject in a 22-minute documentary film made for the company's Electronics Division at Syracuse by the March of Time.

Various media which keep the American people the best informed in the world are woven into the film as it follows an average family and the community life of Syracuse, N. Y., through a typical day. The movie reaches its climax with a simulated atom bomb attack on Syracuse, and records the working of an emergency radio communications system used to direct rescue and other operations in the "disaster" area.

Representatives of the G-E Electronics Division are showing the movie to various civic and professional groups throughout the country. The film, in 16 mm. size, is available through G-E district film libraries in the field, or the G-E Electronics Division at Syracuse, for showings to state and municipal organizations, to civic and industrial groups, and to other individuals.

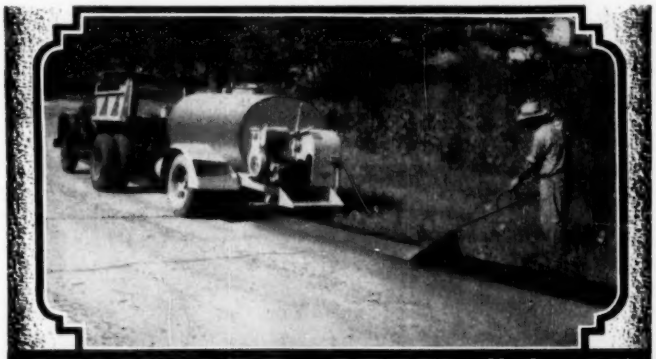
The film was given an Honor Medal Award by the Freedoms' Foundation at Valley Forge, Pa., for General Electric having produced a significant contribution in the interests of Freedom and the preservation of our way of life.

Insecticide For Clover Mites

Clover mites, a major pest in many residential areas in the United States, are controlled by a new Miticide, Chem-Mite, manufactured by the Chemical Insecticide Corp., 57 13th St., Brooklyn 15, N. Y. According to the company, pest-control operators who have field tested Chem-Mite report excellent results by obtaining quick initial kill and a long residual period against all stages of mites.

During the past year, many pest-control operators experienced considerable difficulty in attempting to control clover mites, and many different insecticides and combinations have been used without success. Efficient control of clover mites is difficult because of their rapid reproduction rate.

Chem-Mite usually gives residual control of from six to eight weeks. When used at the rate of one quart to 5 gallons of water or oil in the interiors of buildings, or at the rate of 2½ to 5 quarts of concentrate to 100 gallons of water for outside spraying, Chem-Mite is effective against the clover mite eggs as well as against other mite eggs.



STANDARD STEEL "S-J"
for PATCHING — PRIME COAT — SEALING
SHOULDER REPAIR and CRACK FILLING

Built to The Highest Standard

Compare These Special "S-J" Features:

1 SUCKS BACK surplus material into tank after spraybar is closed. Less drip! Means clean bar for next job!
2 PIPING and PUMP are automatically drained after finishing a job! This prevents "freezing" or slow start on heavy materials!
3 All OPERATIONS easily controlled by one operator riding the unit!
4 GRAVITY DRAW OFF ON CURB SIDE—means greater safety for operator!
5 ALL PARTS Readily Accessible for easy repair. Entire piping system can be taken down by unbolting only two circle flanges!

SAVES TIME and LABOR
HANDLES ALL TYPES OF BITUMINOUS MATERIAL

★ For year round use—Standard Steel "S-J" Maintenance Distributor can be used either for emergency or secondary construction work.

The most adaptable piece of road equipment you can buy, the "S-J" performs many duties of heavier machines — such as building drives, alleys, playgrounds, parking areas, shoulders, reshaping curves as well as patching and sealing. Quick to start and get going, fast on the job, the low cost of this equipment will be paid for in reduced construction and maintenance cost in a single season. Get the facts and cost on the "S-J" before you invest in any similar equipment.

OTHER STANDARD STEEL PRODUCTS

Asphalt Pressure Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms and Aggregate Spreaders.

WRITE FOR NEW Catalog "S-J"

SJ5

Standard Steel Works, NORTH KANSAS CITY, MO.

How Bitumuls paved Eniwetok at "Stateside costs"

Bulk loads of easily-transported BITUMULS® made possible paving isolated Eniwetok at costs comparable to those of the California Highway Department. By million-gallon tankers, then from tanker to barges, from barges through submarine invasion pipe-line to shore tanks—Bitumuls was delivered to Eniwetok.

American Bitumuls & Asphalt Company specialists helped the engineering and construction firm of Holmes & Narver, Inc. develop a crushed coral and coral-sand mix with a special Mixing Grade of Bitumuls that is miscible even with ocean water. This stable, cold-mixed paving material was produced and placed in record time despite difficult tropical conditions on the atoll.

Proved on many offshore jobs, Mixing Grades of Bitumuls are ideal for treating virtually all available aggregates. Quick-Setting Grades of Bitumuls are favored the world over for armorcoat and macadam work. High Viscosity Bitumuls is recognized by most state highway departments as standard for surface treating.

Nation-wide there are Bitumuls Engineers working out of strategically located plants. These men are specialists, qualified by training and varied experience to consult with you, to your advantage, about your paving needs . . . roads, parking areas, airports.

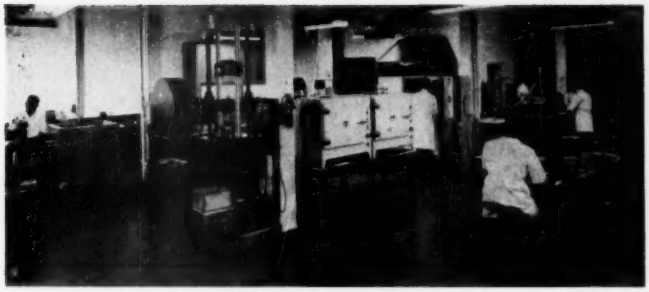
Bitumuls is ready for prompt delivery to your job site.

AMERICAN
Bitumuls & Asphalt
COMPANY

200 BUSH ST. • SAN FRANCISCO 4, CALIFORNIA

Providence 14, R. I. Perth Amboy, N. J. Baltimore 3, Md. Columbus 15, Ohio
St. Louis 17, Mo. Mobile, Ala. Baton Rouge 2, La. Tucson, Ariz. Inglewood, Calif.
Oakland 1, Calif. Portland 7, Ore. Seattle, Wash. Washington 6, D. C. San Juan 23, P. R.

MANUFACTURERS OF ASPHALT AND ASPHALTIC PRODUCTS



General view of the Natural Rubber Bureau Research Laboratory. While primarily developed for rubber road research, the laboratory will also work on Government and other contract assignments having to do with broader paving research.

Natural Rubber Bureau Opens Laboratory for Rubber Road Research

The advent of rubber in the highways of the future moved a step closer towards accomplishment with the opening of the new Natural Rubber Bureau Research Laboratory in Rosslyn, Va., just across the Potomac River from Washington, D. C.

According to Warren S. Lockwood, director of the Natural Rubber Bureau, 1631 K St., NW., Washington 6, D. C., tests "indicate that the addition of natural rubber powder to asphalt makes paving less susceptible to the effects of weathering in general, less brittle in the winter, less soft in the summer, adds elasticity, reduces effect of shock and vibration, causes the paving to resist formation of ice film, and minimizes skidding."

He points out that "in order to prove all of these facts to the satisfaction of the American highway engineer, it was essential that the on-the-road tests be correlated with laboratory research. The Natural Rubber Bureau Research Laboratory now puts us in the position to determine the facts as to the saving and safety advantages of rubber roads."

The laboratory, which will conduct Hveem, Marshall, and Hubbard stability tests, is under the engineering direction of Harry K. Fisher, rubber road consultant to the Natural Rubber Bureau. He says that the basic aim of the laboratory is to fully determine the extent of the advantages brought about by the addition of rubber to asphalt for highway use. In carrying out this objective, tests will be made with every type of rubber (natural, reclaimed, and synthetic) in every possible form. A wide variety of tests will also be conducted to determine the best method of introducing the rubber into the asphalt paving material.

A.G.A. Merges With Elastic Stop Nut

A merger was effected March 1, 1952 of the American Gas Accumulator Co., with the Elastic Stop Nut Corp., of Union, N. J. The policy, management, products, and address of the A.G.A. will remain the same.

"As part of a larger business operation," said Mr. Merrill, former A.G.A. president, "I believe many advantages will accrue to our customers and suppliers."

The location of offices and factories remain at 1027 Newark Ave., Elizabeth 3, N. J., and 3445 North Kimball Ave., Chicago 18, Ill.

Mr. Merrill reports that the company's products will continue to be airport lights, taxiway and highway delineators, traffic and parking signs.

UNDERGROUND PIPING JOBS DONE IN LESS TIME AT LOWER COSTS

Here's the quick, simple way to install pipe under streets, walks, tracks, floors and lawns. With a GREENLEE Pipe Pusher *one man* pushes pipe *under* obstacles. No tearing up concrete, lawns, floors. Eliminates extensive ditching . . . no tedious tunneling, back-filling, repaving. Cuts job time to a fraction . . . GREENLEE Pipe Pusher often pays for itself on first job. Get facts today.

GREENLEE

Greenlee Tool Co., 2024 Columbia Ave., Rockford, Ill.

THE MODERN LAWN MOWER SHARPENER

CUTS MAINTENANCE COSTS

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LOWER CAPITAL INVESTMENT

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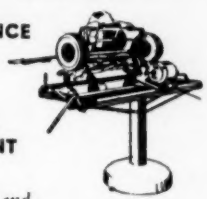


Economically and Quickly Sharpens All Municipal Mowers

Priced $241.50 (less motor)

Sharpens All Reel Type Mowers • Hand, Power or Gang • 10 to 20 Minutes • No Dismantling No Extra Attachments Needed

All reel type mowers, from 5-inch edgers to 34 inch power mowers, are quickly sharpened to extreme ends of both left and right twist reel blades. Handle, wheels, roller and motor remain in place when sharpening is in process. Bed knife is sharpened in same brackets that hold mower in grinding position. No extra attachments required. One lever puts mower or bed knife in grinding position. 100% steel construction. Grinding head rides on five ball bearing races. Small, compact, easy to operate. Sharpens wood chisels, joiner knives and planer blades without extra attachments. Skate Sharpener Attachments available.

1/3-hp. G.E. 60-cycle Motors now available—$21.50 extra.

Send for Free Bulletin No. 258

ORDER NOW • IMMEDIATE DELIVERY

MODERN MFG. CO.

160 N. FAIR OAKS AVE. • PASADENA 1, CALIF.

American Vacuum Leaf Loader

Solves your leaf or clean-up problem

Write for leaflet

LEAF LOADER DIVISION

American Structural Steel and Tank Co.

21050 W. 8 MILE ROAD DETROIT 19, MICH.

Samson Is The Answer Wherever Public Seating's The Problem!

Armstrong Browning Library, Baylor University, Waco, Texas

America's First Choice For Comfort, Economy and Long Life

IN SCHOOLS, churches, hotels, institutions, business places—wherever the problem is to provide comfortable, low-cost public seating—Samson has the answer! Samson is America's leading public-seating specialist, with many styles and colors of Samson Folding Chairs to help you meet your public-seating needs. Samson Chairs assure you of—

Real Public-Seating Comfort! Samson Folding Chairs are designed with the sitter in mind! Backs are posture-curved and seats are large and roomy for extra comfort.

Low Upkeep! Samson Chairs are made of heavy-gauge, electrically welded, tubular steel. Built strong enough to stand on, they require little maintenance. They're cross-braced for extra strength, Bonderized for weather resistance, smoothly finished in chip-resistant baked enamel. They open, fold, stack and store easily.

Low Cost! Ask your Samson distributor about special low prices on quantity purchases and for a quotation on your needs—or write us direct.

Leading Users of Public Seating Everywhere Choose Samson Folding Chairs!

Denver University, *Denver, Colorado;* Corning Glass Works, *Troy, New York;* Woodward & Lothrop, *Washington, D. C.;* Hotel San Carlos, *Pensacola, Florida;* Columbia Broadcasting System, Studio 21, *New York, New York;* St. Gregory's Church, *St. Louis, Missouri;* E. I. DuPont DeNemours & Co., *Wilmington, Delaware;* Matson Steamship Company, *San Francisco, California;* Kalamazoo State Hospital, *Kalamazoo, Michigan.*

Strong Enough To Stand On!

THERE'S A Samson FOLDING CHAIR FOR EVERY PUBLIC SEATING NEED

FREE TRIAL IN YOUR OFFICE!

● Write us on your letterhead, telling us your public seating problem. We will send you, express prepaid, for examination in your own office, one of the amazing new Samson series 2600 folding chairs. See for yourself why this is America's Number One Public Seating Buy!

Shwayder Bros., Inc., Public Seating Division, Dept. L-3, Detroit 29, Mich.

ALSO MAKERS OF FAMOUS SAMSON FOLDAWAY FURNITURE FOR THE HOME AND SMART SAMSONITE LUGGAGE FOR TRAVEL

Cooper-Bessemer Office, Warehouse in New Orleans

T. E. Kraner F. A. Gehres

A combined regional office and warehouse has just been established at New Orleans, La., by The Cooper-Bessemer Corp., Mount Vernon, Ohio, according to Stanley E. Johnson, vice-president. Operating under the direction of T. E. Kraner, branch manager, the company's new district facilities now provide direct factory representation for all engineering service requirements on engine and compressor applications. In addition, the new warehouse stocks essential parts for servicing marine and industrial installations currently operating in the Southern Gulf Coast area. F. A. Gehres will serve as assistant branch manager.

The new district office and warehouse are located at 1410 South Jefferson Davis Parkway.

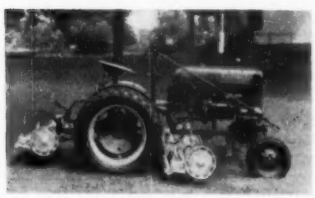
Power Lawn Mower For Use on Tractor

A new, 3-gang, center-mounted lawn mower is currently being offered by the Ideal Power Lawn Mower Co., Springfield 4, Mass. It is designed for use on the International-Harvester Farmall Cub tractor.

Standard equipment consists of three 5-blade steel wheeled cutting units, and a two-piece underslung type frame easily attached to mounting pads on rear axle and clutch housings.

Both front and rear gangs are raised and lowered by the Farmall touch control system.

The three-gang center-mounted mower for the International-Harvester Super A tractor is similar in design to the Cub center-mounted mower, but with the added power and traction of the Super A tractor, this application is more suited to rolling and more rugged type of terrain.



A three-gang center-mounted lawn mower designed exclusively for the Farmall Cub tractor.

INVISIBLE ARMOR
You FARE better when your contractors are bonded by National Surety Corporation. You require successful bidders to have
Financial stability
Ability
Reputation
Experience
So do we!
And you can depend upon it that when you accept the bid of a contractor bonded by National Surety Corporation, you have two-way protection—a fully qualified contractor whose performance is bonded by one of America's leading corporate sureties.
NATIONAL SURETY
CORPORATION
4 Albany Street, New York

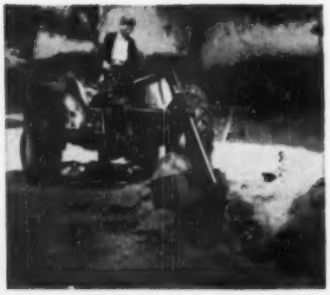
DIGGING COSTS REDUCED!

Whatever your digging job, you'll find that the Sherman Power Digger will do heavier work and do it faster on all of your jobs which are now done wholly or partly by hand.

What's more, you can drive the Sherman Power Digger over pavements and lawns without the risk of damage usually caused by heavier equipment.

Back-hoe shovels retain their load up to 7 feet, to clear truck bed. The speed and efficiency of this popular digger is apparent once you see it at work.

Fast, efficient work is possible in cramped working areas. The Sherman Power Digger can even be used inside buildings. Only 7'6" overhead clearance is required.



Digs through asphalt and macadam—works well in hardpan clay, gravel, shale and stony ground. Easily handled with four simple hand controls.

• • •

Mounted on a rubber-tired Ford or Ferguson Tractor with Sherman auxiliary transmission providing 12 forward, 3 reverse and 3 power take-off speeds. Length only 13' 4"; height, 10' 3"; width, 5' 6". From one position will reach to dig 10 feet behind tractor in 140° arc and to depth of 8 feet.

For complete information and name of nearest distributor who can show you the money-saving Sherman Power Digger in action, WRITE TODAY to Sherman Products, Inc., Dept. D, 3200 W. Fourteen Mile Road, Royal Oak, Michigan.

Sherman PRODUCTS, INC.

Patent No. 2,383,825. Other patents pending

FARM AND INDUSTRIAL EQUIPMENT MANUFACTURERS

Designed, Engineered and Manufactured Jointly by SHERMAN PRODUCTS, INC., Royal Oak, Michigan • WAIN-ROY CORP., Hubbardston, Mass.

Lake Shore Markers OF *Lifetime* Aluminum

CHOICE OF MANY PROGRESSIVE CITIES

•RUSTPROOF •DURABLE •ATTRACTIVE

DAY AND NIGHT VISIBILITY

ILLUSTRATED 2-in-1 4-WAY ASSEMBLY WITH BLOCK INSERTS

Lake Shore Markers
DIVISION
LAKE SHORE PATTERN WORKS
654 WEST 19TH ST.
ERIE, PA.

Write for Illustrated Catalog

ALUMINUM IS *Scarce!*
TO INSURE DELIVERY OF SIGNS
PLACE ORDERS NOW!

AEROIL HEET-MASTER 230, 330 AND 500 GAL. KETTLES FOR ROAD REPAIR BUILDING. SAVE 50% ON FUEL AND TIME

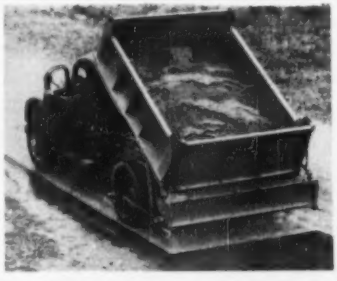
The famous HEET-MASTER Kettle, that does the work of two bottom fired kettles, is available in the larger size for big repair and paving jobs. (Ask for Bulletin No. 400RN).

Other Free Bulletins you'll want to have on file: Nos. 171, Asphalt Surface Heaters & Paving Tool Heaters; 502, Aeroil 400 to 600-gal. Utility Trailer Sprayers; 307Y, All-Steel Tool Boxes; 637, Cut Back & Emulsion Sprayers; 174, Burners & Torches. All AEROIL Products are guaranteed for a full year against defects in workmanship and materials. Experience of over 33 years assures you of the finest and most economical equipment.

AEROIL PRODUCTS COMPANY, INC.
5 Wesley St. South Hackensack, N. J.

Do your seal-coating and ice control jobs the fast, easy Swenson way. Spreads salt, chloride, sand, cinders any width or amount desired.

Free Information



SWENSON SPREADER & MFG. CO.,
Lindenwood, Ill.

Manages Engineering Sales For A. B. Dick Company

The A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31, Ill., announces the appointment of Rudy P. Kaspar as manager of the Sales Engineering Department. The company manufactures mimeograph and lithograph products.

R. P. Kaspar

Mr. Kaspar will be responsible for a product development program of products which will cover mimeograph and lithograph equipment, and the newly developed A. B. Dick folding machine.

During his nine years' association with the company, Mr. Kaspar was in field sales work and served as customer service manager and sales engineering representative.

He will continue to be located in A. B. Dick's Co.'s new plant and general offices in Niles, Ill.

Pump Fits Wells Of 4-inch Diameter

The development of a water-lubricated lineshaft turbine-type pump, designed to fit into wells of 4-inch diameter and greater, has been reported by Jacuzzi Bros., Inc., Richmond, Calif., originator and manufacturer of jet-type pumps.

To be known as the Jacuzzi 4, this low-cost turbine is designed for homes and farms with deep wells, requiring a moderate but consistent water supply. It is suitable for sprinkler or open ditch irrigation, all pressure system uses, and is available with a variety of motor sizes and horsepower ratings.

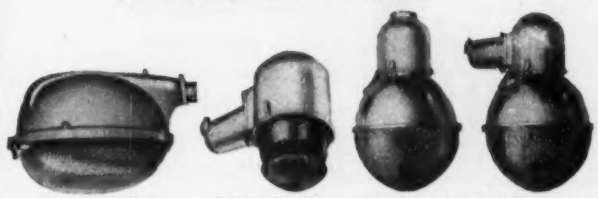
This small turbine can be purchased as a complete unit from Jacuzzi dealers.

This water-lubricated lineshaft turbine-type pump is designed to fit into wells of 4-inch diameter and greater.

Better STREET LIGHTING *by*

Revere
ELECTRIC MFG. CO.

RIGID and HINGED POLES
WHITEWAY PYLON-LITES
LUMINAIRES for
MERCURY-VAPOR and
INCANDESCENT LAMPS

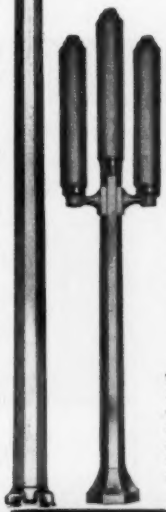


New "ENDOVAL" Street Lighting Luminaire for horizontal burning Mercury Lamps.

PAR-38 Lamp Luminaire with Finishing rings.

Top Mounted Luminaire with "EEI-NEMA" Standard Metal Head.

Side Mounted Luminaire with "EEI-NEMA" Standard Metal Head.



Everywhere municipalities are planning expansion or modernization of street lighting systems. Good management recognizes that improved street lighting is one of the lowest-cost investments in safety and progress any community can make. On every count it pays to light up. Good street lighting makes a live town out of a "dead burg." A bustling shopping district proves that trade follows the light and night shopping increases. Adequate residential street lighting changes dangerous darkness to protective safety. Traffic flow is improved and night traffic accidents are cut down. Revere has everything to exactly meet the needs of your community. Our engineers will gladly work with you.

Whiteway Pylon-Lites available with one, two, or three Luminaires, for use with series or multiple systems.

Hinged Street Lighting Poles—a great boon to safety and efficiency—eliminate expensive servicing equipment.

PROTECTIVE PLAYGROUND SPORTS LIGHTING

REVERE ELECTRIC MFG. CO.

6015 BROADWAY · CHICAGO 40, ILLINOIS

INDOOR AND OUTDOOR LIGHTING EQUIPMENT TO SERVE EVERY NEED

GET THOSE WEED ROOTS!

GO TO THE ROOT OF YOUR WEED PROBLEM WITH THESE DOLGE PRODUCTS

DOLGE SS WEED-KILLER

Where no vegetation whatever is desired such as your parking places, walks and tennis courts. Penetrates deep down to plant roots and *kills*. Sterilizes the soil, preventing normal sprouting of wind-blown seeds. Weeding the thorough modern chemical way eliminates backbreaking toil and saves the cost of many labor-hours.

E.W.T. SELECTIVE WEED-KILLER

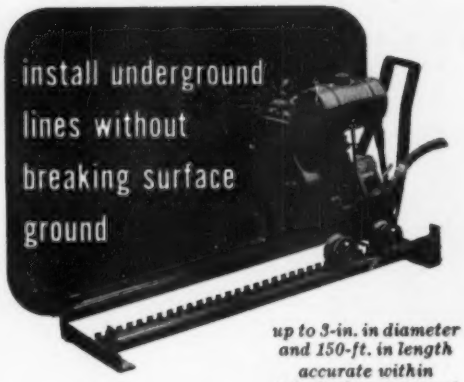
(2-4-D)

The *efficient* way to control weeds on your fairways. Works its way down into the roots of brush, dandelion, plantain, poison, ivy ragweed, sumac and other obnoxious plants, *but does not injure most turf grasses.*

Please write for descriptive literature explaining how these tested DOLGE products can best be used for your weeding requirements.

expendable
DOLGE
WESTPORT, CONNECTICUT

install underground lines without breaking surface ground



up to 3-in. in diameter and 150-ft. in length accurate within 1-inch of target area!

FOR WATER, GAS, SEWER, TELEPHONE, TRAFFIC SIGNAL AND MANY OTHER TYPES OF LINES!

Bore a 3-inch hole at 1½ f.p.m....with automatic warning of underground hazards. The EARTHWORM bores 1000 feet of underground line per gallon of gasoline. Use pipe or conduit as drill stem sections and leave as permanent installations. Save pavement and labor...save thousands of dollars per year...with the proved-in-the-field advantages of EARTHWORM!

IMMEDIATE DELIVERY! SEND FOR DETAILS!

LUBE-JACK CO.
P.O. BOX 1100
Santa Monica, California

AGENTS:

Good, exclusive territories are open for fast-selling "FERRO" signs. Every city needs these highly visible porcelain enamel signs.

"FERRO" signs are nationally known, tested, *proved*. Finest quality steel, deeply embossed, finished in brilliant, permanent porcelain enamel.

If you have allied lines and a following, write today for further information.

FERRO ENAMELING CO.
1100—57th Avenue Oakland 3, Calif.

This fog-foam fire truck provides 4,800 gallons of fog foam per minute.

Largest Fog-Foam Truck

The Washington, D. C., National Airport has installed the largest capacity fog-foam unit offered.

The chassis is a Walter four-point positive drive, 240-hp, on large single tires, 16:00-24, resulting in a unit that can roll quickly on runways and cut across airfields, through mud, sand, or snow to the required crash location.

The unit brings 1,300 gallons of water and 130 gallons of foam liquid to pour on 600 gallons of liquid per minute, giving 4,800 gallons of fog foam per minute. The pumping system provides dual engines with centrifugal pumps, 140-hp each.

The foam system provides ground sweep nozzles which control the fire ahead of the unit, and two foam-discharge turrets on top of the cab to pour fog foam on the heart of the fire and to cover the rescue personnel. Detailed information is available from the Walter Motor Truck Co., Brooklyn 27, N. Y.

New Hand-Size Chain Saw For Faster, Safer Pruning

A new line of hand-size chain saws, designed for faster, easier, and safer tree pruning, trimming, and removal, is announced by the Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill.

According to the manufacturer, these Model 11E electric hand-chain saws are so lightweight and compact that the operator can trim branches with one hand while in the tree or on a ladder. They have also proved successful in cutting roots on stump-removal projects. The line includes 12 and 18-inch cutting bar lengths in standard and deluxe models. Weights range from 12 to 18 pounds. All are powered by universal motors for standard 115 volt a.c.-d.c. current.

Workman operates hand-size chain saw in trimming tree. The equipment is available in 12 and 18-inch cutting bar lengths, and weights vary from 12 to 18 pounds.

jari
POWER SCYTHE

CUTS TALL GRASS—WEEDS—BRUSH

Does the work of 6 men with hand scythes. The self-propelled Jari cuts on uneven ground, steep slopes; safe shearing action. Trims close to buildings, fences, under trees. Takes wide 34-inch cut 1½ inches from ground. Light weight, easy to handle, built for years of dependable service. Power spray and rotary snow plow attachments available.

Write for details and prices to

jari PRODUCTS INC.

Dept. 2934-G, Minneapolis 8, Minn.

Plastic Rock ... THE IDEAL SIDEWALK SURFACING

Here is a *modern*, thorough-going method of renewing city sidewalks and protecting the valuable rental space underneath. Plastic Rock processes make an enduring job, waterproof where necessary; not affected by heat or cold; easy to apply; absolutely slip-proof wet or dry; applied without interruption of traffic; dry ordinarily in 24 hours. Used and praised by many large cities and property owners. Plastic Rock is packed complete in sealed barrels; ingredients are uniform; merely add water; U. L. I. field supervision is available without obligation.

Write for Our Report No. 220-36

UNITED LABORATORIES, Inc.
16820 Euclid Ave., Cleveland 12, Ohio

We shall be glad to give you a complete, reliable report on your sidewalk situation. No obligation.

PRODUCTS AND PROCESSES for PROTECTING PROPERTY
Field Representatives All Over The World

White Specialized Design

Speeds street oiling in Erie

THE CITY OF ERIE
ERIE, PENNA.

DEPARTMENT OF STREETS AND PUBLIC IMPROVEMENTS
THOMAS H. McCARTY, DIRECTOR
R. C. GROVE, SUPERVISOR

January 23, 1952

Mr. Robert P. Black, President
The White Motor Company
Cleveland 1, Ohio

Dear Mr. Black:

We would like to take this opportunity of expressing our complete satisfaction in our White 3018 streets oiler in handling the job of repeatedly oiling our approximate 110 miles of unpaved streets these past two (2) seasons.

Factors needed in a truck to do this job are short turning ability, wide visibility, and a shock-proof type of ride since frequent "chuck holes" are encountered on roads of this nature. Drivers report 100% satisfaction in our White 3000 for filling the bill in respect to the above conditions.

Our department is looking forward to many more years usage of this "job designed" truck.

With kindest regards,

Thomas H. McCarty, Director
Department of Streets and
Public Improvements
City of Erie, Pennsylvania

TAILORED exactly to the work it does, this White 3000 saves time . . . does more work.

And it costs less to operate . . . wins driver favor.

In Erie, Pa., and in many other public service applications across the nation, this new kind of truck is preferred because it does its work better, year after year.

Ask your White Representative how White Specialized Design costs less . . . earns more . . . in your kind of work.

THE WHITE MOTOR COMPANY
Cleveland 1, Ohio

Tips its cab to service

For more than 50 years the greatest name in trucks

Toledo Pipe Tool Representatives

H. W. Sabin H. C. Cochran

Howard A. Mikesell, vice-president and sales manager of the 50-year-old Toledo Pipe Threading Machine Co., Toledo, Ohio, announces the appointment of Harry C. Cochran as the new sales representative for Toledo pipe tools in Texas, Oklahoma, Louisiana, and Arkansas, and Harold W. Sabin, sales representative in Washington, Oregon, Montana, Idaho, Utah, Wyoming, and Vancouver and Victoria, B. C., Canada.

Mr. Cochran will make his headquarters in Houston, Texas, maintaining contact with distributors in the area serving users of the company's line of hand-operated pipe tools, power pipe machines, and power drives. Clifton E. Brokaw, who represented the concern in this area for several years, has resigned to go in business for himself in Dallas.

Mr. Sabin will have his headquarters in Seattle, also contacting distributors in the area serving users of the manufacturer's equipment. A Navy veteran, he completed a training program at the company's plant in Toledo.

Automatic Artificial Respiration Apparatus

A new type of automatic artificial respiration apparatus, the Pneolator, produced by the Mine Safety Appliances Co., Braddock, Thomas, and Meade Sts., Pittsburgh, Pa., was presented recently to the Cincinnati Fire Department by the Lions Club of North Side Cincinnati. The apparatus is used to administer artificial respiration automatically without suction to victims of any kind of respiratory failure. Attending the Pneolator presentation ceremonies in Cincinnati are: (left to right) James Pease, Jr., Cincinnati Fire Chief B. J. Houston; Lions Club President Donald Smith; Rescue Squad Captain Irving Martin, and James Ibold.

FLOW CONTROL NOTES FROM SIMPLEX

Feeding Chemicals in Proportion To The Raw Water Flow

Problem: to feed ferric sulphate to raw water entering the filter plant generally in proportion to the quantity of water flowing. The most logical way to do this was to use a volumetric dry chemical feeder, actuated by electrical means from a venturi meter installed in the influent line.

Solution: 36" x 18" cast iron Simplex venturi tube and a Simplex indicating, recording and totalizing meter were installed. The meter was equipped with a contactor device operating in conjunction with the totalizing element of the instrument and also operating the mechanism of the remote feeder by electric transmission.

Result: an accurate record of influent flow was made, and coagulant was fed to raw water in the correct dosage. Here again the adaptability of the Simplex venturi meter to measurement and control has been demonstrated.

"IT'S SIMPLEX—IT'S ACCURATE!"

VALVE AND METER COMPANY

SIMPLEX VALVE & METER COMPANY
6789 Upland Street
Philadelphia 42, Pennsylvania

Please send free Bulletin #401 entitled "Simplex Type 'H' Meter"

NAME_____

COMPANY_____

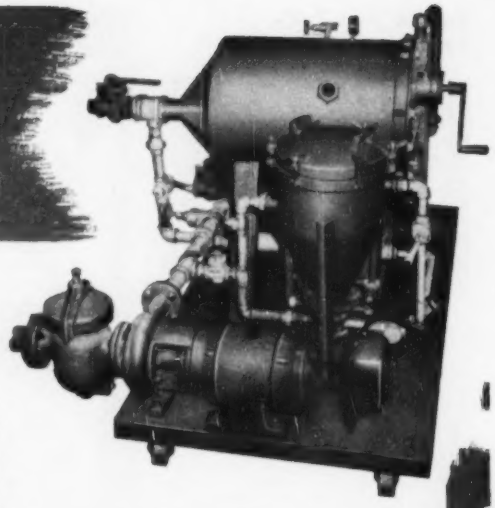
ADDRESS_____

CITY_____ ZONE____ STATE_____

PLANNED PROTECTION FOR WATER SYSTEMS

SPARKLER FILTERS

... ideal for mobile applications



Contamination or failure of municipal water systems is probably the most serious threat to the survival of a community in the event of disaster. With Sparkler mobile filtration systems, however, every community is assured an adequate supply of safe, pure drinking water.

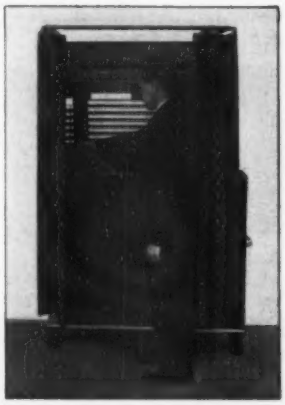
Sparkler Model SC diatomite filters are designed to filter large quantities of water quickly and effectively—at low cost. They are self-cleaning, and do not need to be broken down for either cleaning or inspection. The entire cleaning and pre-coating operation can be accomplished in 15-20 minutes so that the filter is hardly out of service.

Complete units, including filter, pump, slurry feeder, debris catcher, chlorinator, and gasoline engine can be furnished ready for mounting on truck or trailer bed. Filters are available with rated capacities ranging from 900 GPH to 72,000 GPH. These standard sizes, however, can deliver far greater quantities of water when necessary, although this is not recommended for general service. Write for literature.

Other units, designed for manual portability, may be supplied. Our Engineering Service is available for special design work or for modifications of standard models.

SPARKLER MANUFACTURING CO., Mendota, Illinois

7 **Reasons Why More Than 5,500 Cities, Towns and Villages in the United States Use AUTOMATIC VOTING MACHINES**



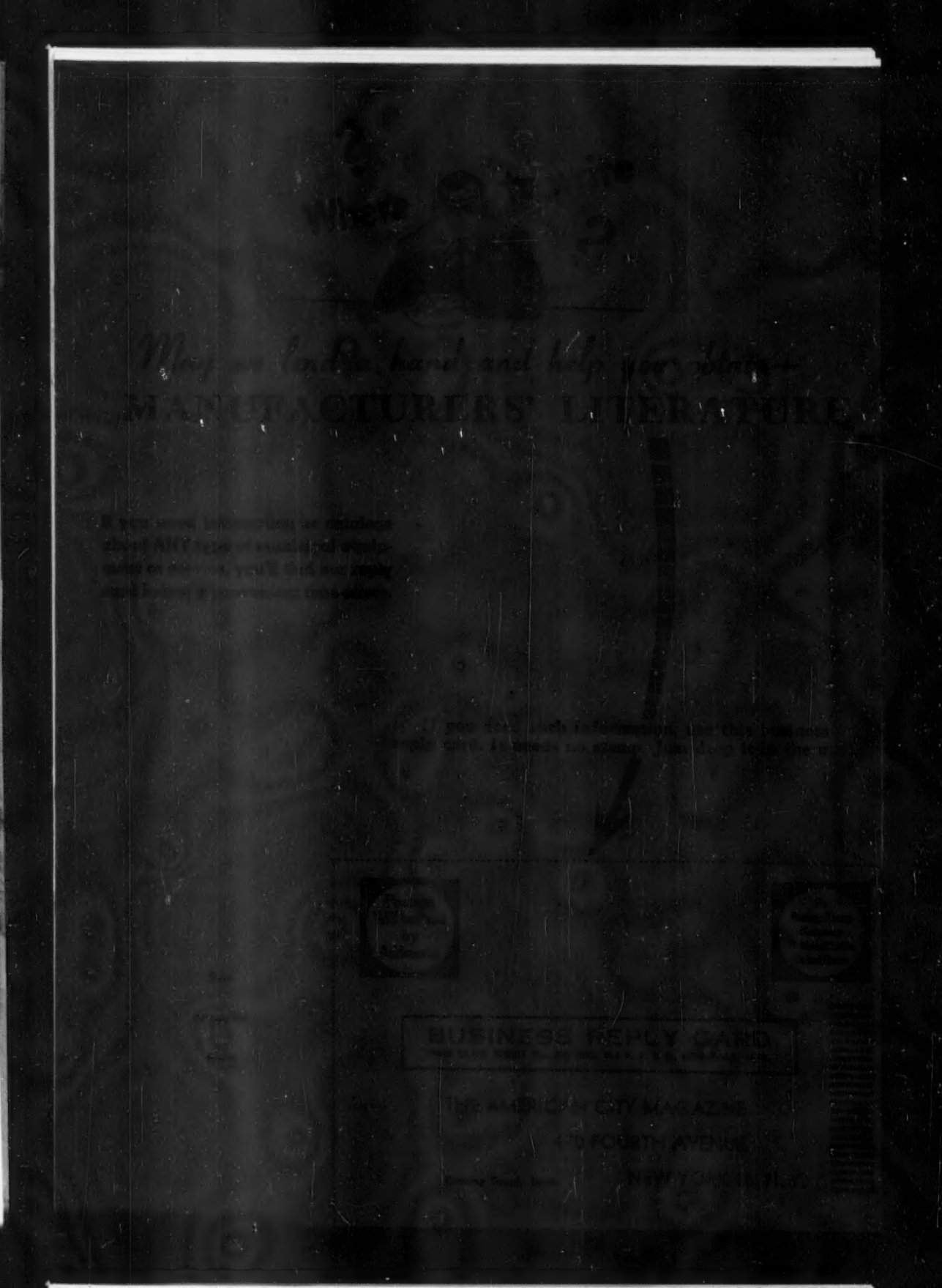
- Voting is easier and quicker
- Secrecy is assured the voter
- There are no spoiled ballots
- The count is mechanically accurate
- The results are immediately known
- There is a permanent record
- Election expenses are reduced

If your community is still using the old-fashioned paper ballot, investigate the possibility of installing automatic voting machines before your next election.

AUTOMATIC VOTING MACHINE CORPORATION

Jamestown, New York

— Since 1898 —



Free Catalog Supply Service

For readers of THE AMERICAN CITY

When checking equipment in this issue of THE AMERICAN CITY, your attention is directed to these services:

1. The catalog listings to be found on page 21, 23, 25, 28, 30 and 32. Each listing has a number. Write the numbers of the catalogs you wish to receive on the reply card below.

2. The "Municipal Purchasing News" section, pages 171 through 174, where descriptions and illustrations of equipment and services are to be found. If you need additional information on any of these, jot down on the card the name of the product and its manufacturer.

In addition, should there be equipment not mentioned in this issue about which you would like information—such as manufacturers' name, source of supply, etc.—make your inquiry on the card. We'll do the rest.

To THE AMERICAN CITY's Catalog Supply Department,

Please send literature on items numbered as follows: (listed on page 21)

.....

.....

Please send me further information on the following products described in this issue:

.....

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.....

I would like to receive also manufacturers' bulletins on

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.....

.....

.....

NAME .....

TITLE .....

ADDRESS .....

.....

CITY .....

Fill in the other side of card—tear off along dotted lines, and drop in mail box

Director of Research For Permutit Company

Martin E. Gilwood has been named director of research for The Permutit Co., Dept. AC., 330 W. 42nd St., New York, N. Y. He will be responsible for all operations of the company's Research, Analytical, and Pilot Plant Laboratories at Birmingham, N. J., and for market research activities from his office in New York.

M. E. Gilwood

Among the positions held by Mr. Gilwood were research engineer, assistant manager of research, and chemical research manager.

Permutit produces equipment for the water supply, sewage and refuse disposal fields.

"Trench-Side" Jointing Speeds Pipe Installation

Employing the "trench-side" method of pipe jointing, the J. & S. Galier Co., Cleveland, Ohio, contracting firm, sped pipe installation at the Solinski and Puritas Road playgrounds in Cleveland. By jointing several pipe lengths outside the trench, the company effected considerable savings in time on the installation of underdrains. The resulting longer length of pipe was then lowered into the trench as a single unit.

This installation procedure was made possible by the Tru-Line Spring Clip method of jointing Bosco perforated plain end pipe which was specified for the underdrainage phase of the playground projects. More than 12,000 feet of Bosco perforated plain end pipe and spring clips were utilized on the two jobs. The equipment is produced by The Bowerston Shale Co., Bowerston, Ohio.

According to The Bowerstown Shale Co., the spring clips are designed to eliminate tedious jointing operations that are necessary with conventional installation methods. The clip lies flat against the pipe, making bell holes and collar depressions in the bedding unnecessary. The clip is flexible and strong yet weighs only one ounce.

The plain-end pipe is adapted to underdrainage because of its absorption qualities, low acid solubility, crushing strength, and the fact that the ends of the pipe are finished, with no "ragged" edges. The pipe's plain end design also serves to minimize damage often resulting from handling.

Plans for both playgrounds were mapped by the city's Division of Design Construction headed by Thomas H. Jones, Commissioner.

"Trench-side" pipe jointing enabled the J. & S. Galier Co., builder of Cleveland's Solinski and Puritas Road playgrounds, to put 14-foot pipe units into the trench at a time. Here, a workman installs Tru-Line Spring Clips which hold Bosco perforated plain end pipe lengths together. This special tool "stretches" the Spring-Clips, making the pipe jointing easy.

Jaeger 60 lb. "Bantam" armored against wear

The only 1½" pump with a replaceable liner plate and stainless steel fitting at point of greatest wear. Engine runs at only 2500 to 3200 rpm instead of the 4200 rpm of pumps that have less capacity. These features mean thousands of extra hours of service. Sure-primes automatically. Pumps 5100 gph. Aluminum model weighs 60 lbs. Powered by 1½ hp. 4-cycle gas engine or ¾ or 1 hp. electric motor. See Bulletin LP-9.

Model 2 PAF delivers up to 9000 gph. Primes in a few seconds (less than 1 min. at 25 ft.). Aluminum, weighs 105 lbs., saltwater resistant. Replaceable liner plate and stainless steel fitting at point of greatest wear.

THE JAEGER MACHINE COMPANY 505 Dublin Avenue Columbus 16, Ohio

COMPRESSORS • MIXERS • TRUCK MIXERS • PAVING MACHINERY

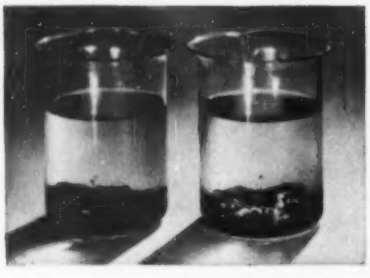
See **THE LINDSAY T-33 COMPRESSOR at the AWWA CONVENTION**

See the real portability of this unit. One man can easily operate it and move it about on the job. See the rugged construction of this powerful compressor. Runs a paving breaker or rock drill in the 30-35 lb. range. See it or write for details.

P. K. LINDSAY COMPANY

97C Tileston Street Everett 49, Mass.

GUARD AGAINST ROADS that end up in the gutter!



These un-retouched photos show why DARAKOTE is making friends everywhere. Left photo contains aggregate coated with DARAKOTE-treated asphalt and immersed in water. Note how asphalt stays bonded to aggregate! Right photo shows aggregate coated with *untreated* asphalt and immersed in water. Note almost complete stripping of the asphalt from the aggregate!

Many an asphalt road never had a chance! Water — from sudden rains, high humidity, or simply from moisture present in the aggregate — has prevented a close bond between the aggregate and the asphalt mix. The result: asphalt that strips off onto tires, aggregate that's whipped off into the gutter, roads that don't stand up!

More and more highway departments now specify DARAKOTE Anti-Stripping Additive to "guard against roads that end up in the gutter". DARAKOTE, added to the asphalt mix, actually displaces water; it prevents stripping both during and after construction, extends service life and durability of the pavement.

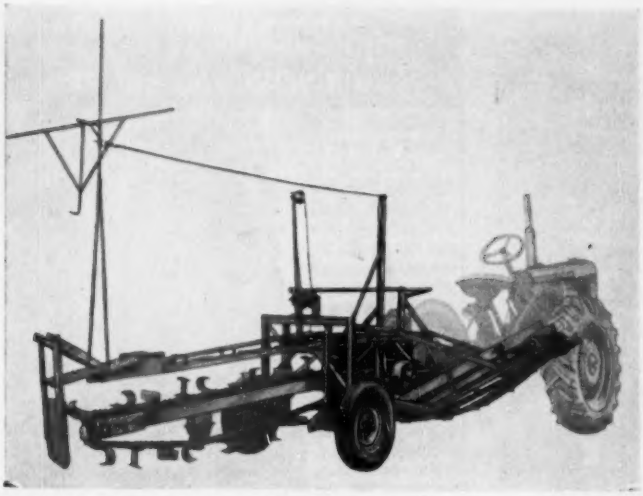
At the same time DARAKOTE *saves money!* It enables road crews to work despite bad weather, giving you more working days in each paving season. And it permits wider use of local aggregates.

Be sure DARAKOTE is included in your plans for 1952 road construction and maintenance. Write for colorful, factual brochure today!

CONSTRUCTION SPECIALTIES DIVISION

DEWEY and ALMY Chemical Company

CAMBRIDGE 40, MASS. • CHICAGO 38 • SAN LEANDRO, CAL. • MONTREAL 32



New ditch-digging machine used for tiling, laying pipe, gas, water and sewage lines, and for digging foundation trenches.

Ditch-Digging Machine

A new ditch-digging machine that will work with any farm tractor, known as the Vermeer Pow-R-Ditcher, is being produced by the Vermeer Mfg. Co., Pella, Iowa. It will dig a 10 to 14-inch ditch, 6 feet deep at a rate up to 3 feet per minute, depending on soil conditions. Trailer-mounted, it uses direct drive from the tractor power take-off, is a one-man operation from the tractor seat, and is simple to install by merely hooking into the drawbar and power take-off.

The Pow-R-Ditcher has a series of long-wearing cutting blades, mounted on a heavy roller chain. Blades are easily removed for sharpening or inexpensive replacement. All dirt is conveyed to one side of the ditch. A handy grading device enables one to do his own tiling on rolling or level land.

The company reports that its equipment is being employed by tiling, laying pipe, gas, water and sewage lines, and for digging foundation trenches, as well as for small construction crews and custom operators.

American Concrete Institute Announces Appointments

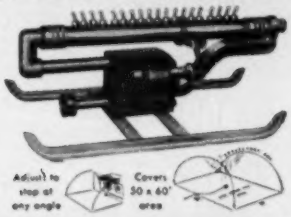
Harvey Whipple, secretary since 1919 and treasurer since 1921 of the American Concrete Institute, 18263 W. McNichols Road, Detroit 19, Mich., has been named editorial consultant by the organization's Board of Direction. Fred F. Van Atta, assistant secretary since January 1946, has been appointed acting secretary-treasurer.

Mr. Whipple had served a number of years with the Detroit Free Press and Detroit News, and was managing editor of Concrete-Cement Age. He inaugurated the ACI News Letter which became part of the Journal of the American Concrete Institute.

Mr. Van Atta, a civil engineer, has worked on precise level surveys with the Coast and Geodetic Survey, foundation investigation and early construction phases of the Kentucky Dam.

ACME Shower Queen

300 GALLONS PER HOUR, FALL LIKE Rain



Adjust to stop at any angle

Covers 50 x 60' area

For LAWN and GARDEN BEAUTY

Shower Queen's oscillating action distributes water in natural rain-like manner. Fully automatic. Simple hand adjustment allows it to operate close to house yet windows and walls stay dry. Easily re-positioned without shutting off water. Small plots or large expanses accommodated by regulating volume at faucet. Built of finest non-rusting materials. Precision machined for long and dependable service. Positively guaranteed.

MAIL COUPON NOW

Please Send Free Data and Shower-Queen Price

Name_____

Address_____

City_____ State_____

ACME SPRINKLERS

Centerlines take a beating but stay bright with "CATALITE"

paint · and · bead package for STREET and HIGHWAY STRIPING!

Literally millions of crystal clear reflective spheres embedded in a tough, highly reflective binder give matchless, all-weather performance. CATALITE is available in either "drop-on" or "premix". Send for information and low prices.

Cataphote Corporation

TOLEDO 10, OHIO

Please rush new FREE CATALITE descriptive pamphlet and prices of your three types of drop-on and also premix for street and highway safety striping. No obligation, of course,

Name_____

Title_____

City_____

State_____

MFRS. AGENTS INQUIRIES INVITED!

Equipped with Rubber Covered Steel Roller and Caster Wheels

Powered with dependable Briggs & Stratton motors, new positive reel adjustment, new all-steel welded deck, heavily reinforced for added strength and rigidity. These improved Cooper roller type mowers provide the most up-to-date mowing equipment now available for service in parks, cemeteries, golf clubs, public institutions, industrial plants and private schools.

"Imperial" model available with Riding sulky, equipped with low pressure 14x400 balloon tires, weed cutting attachment, and automatic dump grass catcher.

Also available as a 65" Heavy Duty Mower with Triplex Cutting Units and Riding Attachment. Will easily maintain any lawn expanse up to 35 or 40 acres.

Write TODAY for literature and name of nearest distributor

• Manufacturers of QUALITY Power Lawn Mowers Since 1926

COOPER MANUFACTURING CO.

SOUTH FIRST AVENUE, MARSHALLTOWN, IOWA

with **GOLDAK EQUIPMENT**
you KNOW you get PPD*

PIN POINT DETECTION

MODEL 620
BOX & VALVE LOCATOR

Pin Point Detection of Goldak's Model 620, saves you time and money, with immediate location of Buffalo Boxes, Valves, Covers and Buried Metals.

Untiring operation, weighs only 8 lbs. Sturdily constructed, all-weather use. High quality parts assures maximum sensitivity, low operating and nominal replacement costs.

you get PPD* with Goldak Locators

*PIN POINT DETECTION

write for **FREE** literature and name of nearest dealer

The name GOLDAK, on electronic instruments, eliminates guesswork . . . your assurance of Pin Point Detection at all times, in any kind of weather. Throughout the world, with companies who need instruments that are accurate and durable, first choice is GOLDAK.

MODEL L46
SENIOR
LEAK DETECTOR

Detect costly leaks in water and low viscosity fuel lines, in their exact position. Completely portable, simple to operate. Latest electronic improvements and high quality parts, assures unequalled performance. Save time and labor, eliminate costly leakage with Goldak Model L46.

you get PPD* with Goldak Locators

*PIN POINT DETECTION

The GOLDAK Company
Leading Makers of PIPE LOCATORS
Since 1933

1544 W. GLENOAKS BLVD.
GLENDALE 1, CALIF.

Giant Fog Nozzle For Large Fires

A 500-gallon-per-minute fog blanket with a large diameter of coverage and a reach of 80 feet is delivered by this new giant-size fog nozzle.

A new giant-size fog nozzle, made especially to combat large fires in or out-of-doors, has been announced by the manufacturer, Bete Fog Nozzle, Inc., 85 Pierce St., Greenfield, Mass.

The Bete Giant Model 500 fog nozzle delivers a 500-gallon-per-minute fog blanket with a large diameter of coverage and an effective reach of approximately 80 feet, according to the company. It is claimed that the tremendous cooling effect of this large volume of fog will almost instantly extinguish large flammable liquid fires, as well as wood, paint, and other types of fires.

Made with 2½-inch National Standard Thread connection, the nozzle can be attached directly to a hose or turret gun having this thread, in place of the conventional straight stream nozzle. It has a patented spiral atomizing element which contains no small orifices or internal parts. Small stones, bits of hose, washers, or other foreign matter pass freely through the nozzle without clogging.

Made of bronze, it has external vanes for added strength in rough service.

J. R. Steelman President Of Koehring Company

At the annual meeting of the Board of Directors of the Koehring Co., Milwaukee 16, Wis., J. R. Steelman was elected president and E. A. Brugger, vice-president and general manager. The company manufactures construction equipment.

Mr. Steelman succeeds G. E. Long, who will remain as chairman of the board, a position he has held dually with the presidency up to this time. Mr. Steelman also will be elected president of each of Koehring's four subsidiary companies.

With Koehring since 1936, Mr. Steelman was named president in 1941 of the subsidiary concern, the C. S. Johnson Co., Champaign, Ill., and in 1943 became vice-president in charge of sales of Koehring. He recently was reelected president of the Construction Industry Manufacturers Association, the Manufacturers Division of the American Road Builders Association.

A 35-year veteran with Koehring, Mr. Brugger has served in purchasing and production activities, and in 1938 became president and general manager of the subsidiary, the Parsons Co., Newton, Iowa, for 10 years. He returned to Koehring in 1948, becoming vice-president in charge of production.

J. R. Steelman **E. A. Brugger**

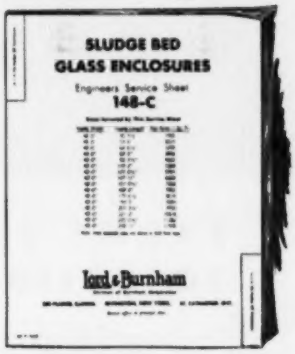
New Revised Engineers Service Sheets Now Available on

GLASS COVERS for SEWAGE TREATMENT PLANTS

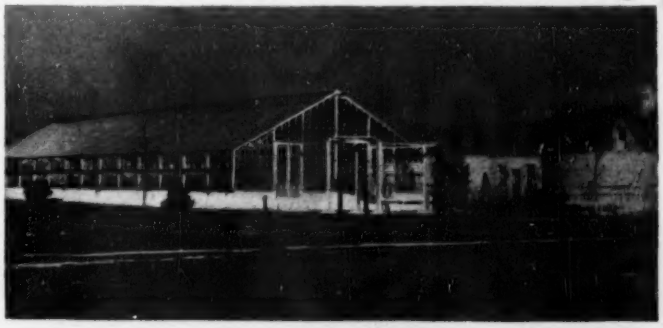
Sludge beds, sprinkling filters, tanks or wherever a glass cover is needed.

Send for These Valuable Engineers Service Sheets

New set of six Engineers Service Sheets furnished on request. Contain details, specifications and recommendations to suit individual job requirements.



Lord & Burnham
DIVISION OF BURNHAM CORPORATION
IRVINGTON, N. Y. DES PLAINES, ILL.



Typical Sludge Bed Glass Cover

FARMS THAT "GROW" CONCRETE TO BUILD A STRONGER AMERICA

Two of the strangest farms in America "grow" concrete in northern Illinois and central Georgia. They are the Portland Cement Association experimental farms, where scientists study the effects of weathering on concrete in northern and southern climates.

"Growing" here are better pavements for defense highways, stronger runways to resist the impact of huge commercial and military planes and the terrific heat of jets, walls with greater resistance to the elements for factories, schools, hospitals, homes, hangars, warehouses, stores and public buildings.

"Plantings" made on farms, starting in 1940, consist of rows of concrete slabs, posts and boxes which simulate pavements, structural columns and walls. Specimens contain different proportions and combinations of materials used in making concrete.

Research like this is a continuing and expanding activity of the Portland Cement Association. Out of this research comes technical information on the best concrete mixtures and the best construction practices for building structures exposed to all conditions of service and weather.

Such information is made public immediately and freely through the Association's field engineering service and its educational and promotional program which is made possible by the voluntary financial support of its 68 member companies.

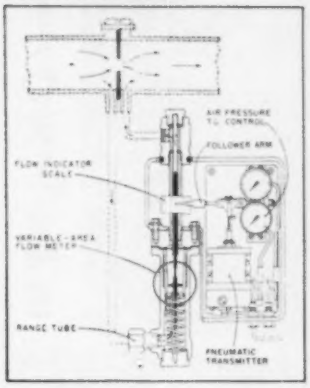
Thus the knowledge gained in the laboratory and in field tests can be used quickly by architects, engineers and contractors in designing and building more durable and ***lower-annual-cost*** facilities needed for our general economy and the defense program.

PORTLAND CEMENT ASSOCIATION

33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Orifice Metering For Waterworks



A diagram showing the interior of the V/A Cell for orifice metering which measures by-pass flow rather than static head.

With a new product, known as the V/A Cell, the Fischer & Porter Co., Hatboro, Pa., introduces to steam power and water supply industries an entirely new approach to orifice metering. Instead of measuring the static-pressure differential across the orifice (as do conventional mercury manometers), the new unit meters a continuous by-pass stream around that orifice. The company states that its product offers less freeze-up, linear charts, wide rangeability, and simple centralized control.

Four features of the V/A Cell are: its metering is kinetic; a linear relationship exists between the metered by-pass flow and the main flow past the orifice; a simple adjustment of the by-pass rate gives the unit enormous flexibility, and it is adaptable to pneumatic connection to points remote from the orifice run.

In the steam power water treatment and water supply fields, these characteristics (kinetic action, linearity, rangeability, flexibility, and pneumatic transmisson) mean: 1—elimination of condensate pots in exposed locations; 2—greater chart (linear scale) accuracy at low flows, and consequently more exact ratio control (as in chlorination or adding water-treatment reagents), 3—enough rangeability to handle variation of steam or water demands with the season or the connected load, and 4—simple central panel control through pneumatic linkage.

The principal parts of the V/A Cell are a variable-area meter whose float position inside a tapered tube changes with flow, a balanced follower arm, magnetically linked to the float, and a pneumatic unit for transmitting flow-rate measurement to remotely located recorders, indicators, totalizers, ratio controllers, or other receiving instruments.

To meet wide metering requirements, the V/A Cell is manufactured in two working models: one with working pressure rating at 1040 psi at 350° F or 1200 psi at 100° F, the other rated at 2600 psi at 350° F or 3000 psi at 100° F.

The 9x11x7-inch, light gray, Hammer tone aluminum cell-case is moisture and fume proof. It can be mounted at the orifice flange or up to 30 feet from the orifice flange.

Dr. Steinman Receives Decoration from French

A distinguished French decoration recently was conferred upon Dr. D. B. Steinman, 117 Liberty St., New York 6, N. Y., internationally eminent bridge engineer. He has been decorated with the Cross of Lorraine and has been made a Knight of the Order of the Cross of Lorraine (Chevalier de l'Ordre de La Croix de Lorraine et des Compagnons de la Resistance).

Dr. Steinman was selected for this rare honor in recognition of his patriotic and military services during World War II and for his military engineering contributions, as well as for a lifetime of high professional achievements of international scope.

In the entire world, 80 individuals have received this honor, with only 30 in the United States, including President Franklin D. Roosevelt and General Dwight D. Eisenhower.

Quad-O-matic
FOR GARBAGE AND RUBBISH PICK-UP

Faster Loading
Larger Capacity
Faster Dumping

● It's proving revolutionary! Cities across the country are discovering the economies of the faster, easier loading and dumping "QUAD". Its top-loading design and all-aluminum construction means up to 20% greater load by weight and size.

Some good territories still open for representation

EQUIPMENT MFG. INC.
21550 Hoover Road
Detroit 5 • Michigan

WRITE FOR COMPLETE INFORMATION

TIFA FOGGING . . . proved method for a more effective

FLY OR MOSQUITO CONTROL PROGRAM

TIFA is in use throughout the world in the fight against insects . . . in health programs, at public gathering places, resorts, homes, garbage and fill dumps, ranches and farms.

Prepare **now** for the Spring and Summer insect invasion of your city.

TIFA, Todd Insecticidal Fog Applicator, is the **most effective** method of killing flies, mosquitoes and other flying pests, thus helping to prevent typhoid, dysentery, diphtheria, polio and malaria from spreading in your community.

TIFA spreads a clean, chemical fog—economically and quickly—gets into even the smallest crevices. INSECTS CAN'T ESCAPE IT!

The **TIFA** unit is compact and portable—powered by its own gasoline engine. TIFA is constructed for easy one-man operation.

TIFA carries the Underwriters' Listing Seal. Write now for complete details of this proved fogging method.

TIFA

TODD INSECTICIDAL FOG APPLICATOR

Carrying Underwriters' Listing Seal

COMBUSTION EQUIPMENT DIVISION

TODD SHIPYARDS CORPORATION

81-16 45th Ave., Elmhurst, Queens, N. Y.

Canadian Distributors

Spramotor Limited, 1099-1105 York St., London, Ont.

Insectifog Unlimited, Lindsay Bldg., Winnipeg

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STREET, SAFETY, PARKING LINES $97.50

Efficiently Made at Walking Speed! F.O.B. Detroit

Communities from coast to coast are drastically cutting the maintenance costs of traffic and parking lines with **FLORLINE**. Often pays for itself on the first job! Note these exclusive Florline advantages:

1 man, 1 hand operation. No attachments. Gravity feed.

Makes curved, straight, continuous or skip lines . . . 2, 3 or 4 inches wide with interchangeable carriages.

Holds 1½ gals. paint, lacquer, whitewash. Cannot spill. Portable, efficient, speedy. Pays for itself quickly. Easy to clean, transport and store. FULLY GUARANTEED.

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WATER and SEWAGE WORKS EQUIPMENT . . .

— for metering and controlling flow of liquids, air, dry materials. For Bulletins and complete information, address Builders-Providence, Inc. (Division of Builders Iron Foundry), Providence 1, Rhode Island.

BUILDERS-PROVIDENCE

Worthington Lists Personnel Changes

A. L. Jones has been appointed manager of the Water Treating Division of the Worthington Corp., Harrison, N. J., according to an announcement by W. H. Feldmann, vice-president in charge of sales.

A. L. Jones

Formerly manager of the sale of Water Treating and Deaerator Section of the Steam Power Division, Mr. Jones will now be in charge of sales, engineering, production, and service of water-treating equipment.

With Worthington since 1920, Mr. Jones has served as a sales engineer, application engineer in the Direct Acting Pump and Heater Department, and in 1933 was named assistant manager of the Steam Power Division in charge of heaters and deaerators.

According to an announcement by Mr. Feldmann, Worthington has elected C. K. Hood, formerly manager of the corporation's New York District sales office, to a vice-presidency. Mr. Hood will direct the activities of the Public Works, Steam Power, Deaerating, and Steam Turbine divisions, and will report to T. Cruthers, vice-president.

C. K. Hood

Other Worthington promotions include: W. J. Van Vleck, manager of the Atlanta District sales office, who succeeds Mr. Hood as New York District sales manager; C. W. Kramer, resident general line salesman in Birmingham, Ala., who succeeds Mr. Van Vleck in Atlanta, and I. W. Leggett, general line salesman at Charlotte, N. C., who has been named manager of the Charlotte Branch office.

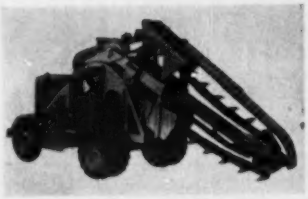
Trench Digger Handles All Utility Excavations

A new, highly mobile, rubber-tired, ladder-type Trenchmobile that will handle all types of utility excavations, has been announced by the Parsons Co., Newton, Iowa. The Model 88 Trenchmobile digs to a maximum depth of 5 feet and widths of 8 or 12 inches.

According to the company, this compact and highly maneuverable machine has unlimited applications for digging trenches for utility mains and services, and many other excavations within its range of widths and depths. Powered by a 43.6-hp gasoline engine, it is a heavy-duty unit constructed on an all-welded arch type frame. Variable speed selections are provided for operating the bucket line, conveyor belt, travel, and digging traction.

The 88 has road speeds up to 12.65 mph for self-powered moves between jobs. Among its features are controlled discharge through a reversible and shiftable belt conveyor, telescopic ladder-type boom with positive down crowd, automotive steering and rear wheel hydraulic brakes, and optional blade for backfilling.

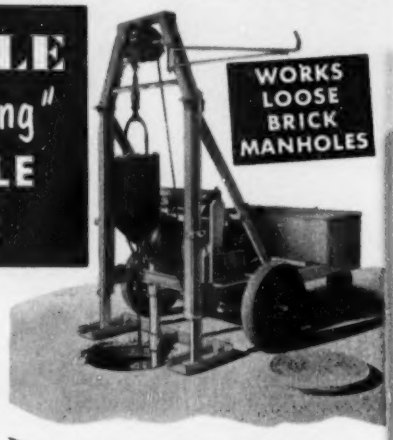
Other features include: a hinged crumber that permits vertical set-ins and undercutting; self-cleaning buckets fitted with easily replaced Parsons Tap-



Mobile, ladder-type Model 88 Parsons Trenchmobile which has road speeds up to 12.65 mph for self-powered moves between jobs.

In teeth, and antifriction bearing-mounted main shafts with fully enclosed gears running in oil.

FLEXIBLE
"Surface-Hung"
MANHOLE
ROLLER

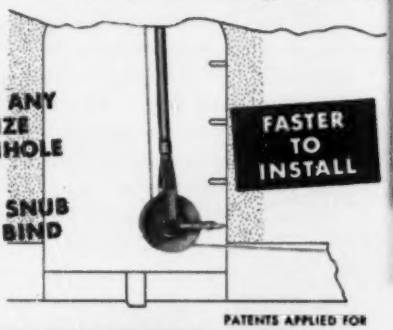


It's New!
Revolutionary!

- Operates at any angle of circle without moving machine. Adjust platform only.
- Installs in a fraction of the time of ordinary jacks. No holes to chisel in bricks.
- Hangs in manholes too narrow for present jacks.
- No rebuilding of manholes necessary. Operates in "loose brick" manholes.
- Less snub on roller eliminates cable bind. Bucket passes easier.

FITS ANY SIZE MANHOLE

LESS SNUB NO BIND



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OF PIPE CLEANING TOOLS AND EQUIPMENT

ARLINGTON COUNTY, VA., 100% EQUIPPED with HARLEY-DAVIDSONS

Shown with these five Hydra-Glide Harley-Davidsons, from left to right are Officers D. Topley and E. Summers, Sgt. W. Fawver, and Officers E. Redmon and N. Henry

5 NEW MACHINES MAKE TOTAL OF 27

Across the Potomac from Washington, D. C., is Arlington County. Because of its proximity to the nation's capital, this swank residential area is confronted with increasingly serious traffic problems. But the officials of the Arlington County Police Department have the answer. They knew from previous experience that motorcycle patrols were the easiest and most effective way to prevent accidents and enforce traffic laws. So when Arlington County traffic had "growing pains," they increased their traffic control power with additional Harley-Davidsons.

It's as simple as that. Provide your officers with an adequate number of Harley-Davidson Police Motorcycles, Servi-Cars and Side-cars . . . and you'll keep the upper hand over mounting disregard of traffic regulations. Ask your dealer for complete information or write . . .

HARLEY-DAVIDSON MOTOR COMPANY, Milwaukee 1, Wisconsin

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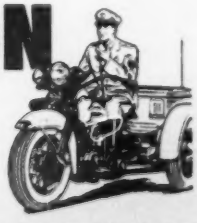
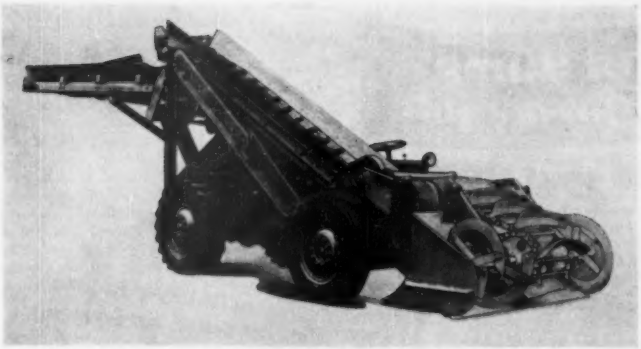
You'll find many helpful ideas for your traffic department, in this new, illustrated 16-page booklet. It's full of information about police motorcycles and their use in law enforcement and accident prevention work. Your copy will be sent promptly on request. No obligation. Write today.

HARLEY-DAVIDSON

MOTORCYCLES — POLICE — BETTER TRAFFIC CONTROL — SERVI-CARS





Stockpile-windrow loader, capable of loading up to 25 cubic yards a minute in snow and up to 10 cubic yards a minute in other materials.

Stockpile-Windrow Loader

A new stockpile-windrow loader has been announced by the Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill. Designated as the Athey Force-Feed HiLoader, the machine has the Athey full-floating feeder which is suspended from two coil springs and a pivot, allowing the paddle blades to "float" over the contours of the windrow.

A new auger gather-feeder speeds up loading from stockpiles and wide windrows. The spiral blades extend to the moldboards of the gatherer, and keep a steady flow of materials feeding inward to the paddle blades.

Among the other features are: 30-inch conveyor belt which is cleated to handle snow, sand, and other light materials, as well as heavier earth, dirt, and rock, and a swiveling discharge conveyor which can be directed 45 degrees right or left of center and is controlled hydraulically from the operator's seat.

Loading speeds range through four gears from 0.3 to 1.92 mph. The new HiLoader can load up to 25 cubic yards a minute in snow, and up to 10 cubic yards a minute in other materials, depending upon the material.

Manages Owens-Corning's Anti-Corrosion Unit

The appointment of William H. Sedgeman as manager of the Anti-Corrosion Products Division of the Owens-Corning Fiberglas Corp., Toledo 1, Ohio, is announced by Edward J. Detgen, sales manager of the company's General Products Division.

W. H. Sedgeman

Mr. Sedgeman will direct all research, production, and sales activities of the division, which produces inner and outer pipe wrap used to protect underground pipelines against corrosion, fiber-type expansion joint for use in heavy concrete construction and canal liner which is employed in water conservation programs. These products consist of a combination of fibrous glass and asphalt.

Joining Fiberglas in 1938, Mr. Sedgeman has had 19 years of experience in the glass industry, and has held positions in auditing, sales control, sales and production control, general service, and market analysis.

He is technical consultant to the Economic Policy Committee of the Business Advisory Council, U. S. Department of Commerce.

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$35.75
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PORTABLE
Weight 160 lbs.
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Order Your All-American Grill TODAY!

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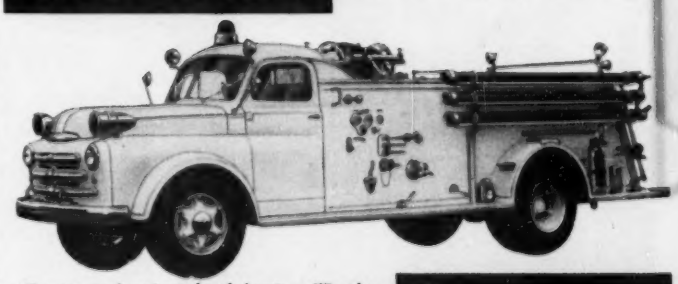
PLAYGROUND DEVICE CO.
ANDERSON, INDIANA

American
FIRE ENGINES

BARTON SUPER-FOG EQUIPPED
GIVE YOU Extra
FIRE-FIGHTING POWER



Choose your favorite make of chassis — We take responsibility for entire unit — Choose from a variety of front or midship mounted pumps —

You also get famous BARTON SUPER-FOG Equipment—for the most effective fog-laying known! Outstanding engineering and workmanship give you *extra* fire-fighting power, *extra* dependability, *extra* maintenance economy. *Decide on AMERICAN!* Write for literature and name of representative.

American FIRE APPARATUS CO.

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Gets fast, clean dumps on Illinois highway job

with HEIL BODIES and HOISTS

Heil Dump Units really pay out — on work you do yourself and on jobs you let out on contract. For instance, Nick Friederich, President, Friederich Trucking Service, Inc., Salem, Ill., hauling contractor on an asphalt paving job on U. S. Highway 45 near Paxton, Ill., says:

"Experience has shown that Heil Bodies and Hoists help speed up our operations. The Heil Twin-Arm Hoist raises the body to a 50° dumping angle fast. This — and the body design with wide-opening tailgate — dumps the load out in jig time."

There's a Heil Body and Hoist that's built to speed up *your* jobs — and do it with less maintenance and repair expense. And there's a Heil distributor nearby, for any service you might need. Write for latest bulletins.

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Factories: Milwaukee — Hillside, N. J.

HEIL reinforced body can't sag!

HEIL hoist and pump assure fast dumping!

HEIL design saves weight, permits bigger loads, saves gas and tires!

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When public safety depends on Emergency Power . . . be sure of the best "US"

"U. S." builds dependable Electric Plants, from 300-watt Portable units to 150 kilowatt Stand-by plants. We'll gladly send you full information.

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The Answer to the Engineer's Prayer

BREAKS CONCRETE FASTER | TAMPS BACKFILL BETTER AND FASTER FOR LESS

THE NEW, MORE POWERFUL

MIGHTY "B" MIDGET

Fastest Pneumatic Concrete Breaker and Backfill Tamper. Replaces all the dirt removed after pipe has been laid. Gives you high density compaction. Ready to repave immediately. No temporary paving. No spoil dirt to haul away. Due to high density compaction, requires little asphalt in replacement. Cuts cost of tamping and breaking of concrete many times. Can be worked manually or automatically. Model MMB will run to full capacity from 160' Compressor—Model MMB-105 will run to full capacity from 105' Compressor. For further particulars see your nearest dealer, or write Department D.

R. P. B. CORPORATION

2751 East 11th Street -:- Los Angeles 23, California

District Sales Manager For Huber Mfg. Co.

The Huber Mfg. Co., Marion, Ohio, announces the appointment of F. W. Gillette as district sales manager in six eastern states, including Virginia, Maryland, Delaware, New Jersey, eastern Pennsylvania, and the District of Columbia. He will maintain offices at 1706 Surrey Lane, N. W., Washington, D. C.

F. W. Gillette

Having more than 17 years of sales experience in the machinery field, Mr. Gillette in 1935 served in the southeastern area for the National Supply Co., Superior Engine Division. In 1940 he joined the Burgman Tractor Co., Jacksonville, Fla., handling the sale of Caterpillar products, and in 1948 became district representative in the Southeast for the Buda Co.

Don McPherson, Huber district manager, will continue covering six northern states in the Eastern District. These include New York, Massachusetts, Maine, New Hampshire, Connecticut, and Vermont. His offices are at 63 Dorchester Ave., Pittsfield, Mass.

Modern Automotive Engine Oils

With the ever-increasing use of "additives" in modern automotive oils, it may be timely to consider briefly what "additives" and their functions are. These are the oils which are complementing advances in mechanical design to give the high efficiency of modern automotive and diesel engines.

Modern premium, heavy-duty, and related types of additive oils will commonly contain more than one type of addition agent. In other words, the oil which is finally sold to the consumer is the product of at least two research programs. The first involves the development of the individual addition agents, and the second develops the additive combinations in carefully selected proportions which will give the all-around performance required in the finished oil.

In general, it is not possible to merely combine additives of known properties and obtain a result which is the summation of the properties of the individual addition agents. The additive balance problem is especially complicated where co-related functional properties are involved, such as exist between oxidation inhibitors and detergents. For instance, detergent type additives are usually pro-oxidants, and it is essential to use them in combination with an anti-oxidant to obtain a satisfactory level of oxidation stability.

Likewise, the film-forming activity of sulfur or phosphorus-sulfur compounds may be disturbed by detergent additives. Hence, this property also requires careful balancing. In some cases, with high detergent oils, it is necessary to add not only additional anti-oxidant, but also definite catalyst-poisoning and film-forming materials in order to make the oils both oxidation-resistant and non-corrosive to alloy bearings.

The problem of multiple additive types in a single oil is further complicated by what is known as "incompatibility". Lesser problems are sometimes encountered when pour depressants, viscosity index improvers, or anti-foaming agents are used with oxidation inhibitors and detergents. It can probably be said that combinations of addition agents require more testing than the individual addition agents themselves before they are found to be satisfactory for commercial utilization.

Additive type crankcase oils are one answer of research to the problem of supplying high quality modern automotive engine oils to meet increasingly severe lubrication requirements and new types of lubrication problems. While numerous advantages are realized from their use, they never have been nor will be a substitute for the best maintenance practices. For a detailed study of "Modern Automotive Engine Oils" write for a copy of *Lubrication* for January 1952, published by The Texas Co., 205 E. 42 St., New York 17, N. Y.

The Hays Model B Tapping Machine gives more room in the ditch . . . ready for operation before placing on main . . . two ratchet wrenches . . . flat link chain, positive grip on main . . . head turns freely at all pressures. It Pays to Buy HAYS . . . Let us show you how you can speed-up installation, write for Folder 125 or ask the Man From Hays.

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WATER WORKS PRODUCTS
HAYS MANUFACTURING CO., ERIE, PA.

SPEED and EFFICIENCY
you never thought possible
in record keeping for
governmental units

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Find out today how the Burroughs Sensimatic can save working hours, reduce your accounting costs, and increase efficiency. And all at a surprisingly moderate cost, too. Call your local Burroughs office or write for complete facts. Burroughs Adding Machine Company, Detroit 32, Michigan.

WHEREVER THERE'S BUSINESS THERE'S **Burroughs**

R. R. Jehn

W. J. Duchaine

American Playground Co. Names Officials

Warren P. Miller, president of the American Playground Device Co., Anderson, Ind., announces the appointment of R. R. Jehn as general manager of company operations in Nahma, Mich. For 18 years, Mr. Jehn was associated with the Bay de Noquet Co. in Nahma before it suspended lumbering operations last year.

Other appointments in Nahma include: Dave Phalen, superintendent in charge of construction and repair of commercial buildings; Allen Mercier, in charge of land and resources, and Frank Hruska, in charge of special projects.

Norman R. Miller, vice-president of the concern, reports that William J. Duchaine, editor of the *Escanaba* (Mich.) *Daily Press*, has been appointed public relations director of the company. Engaged in newspaper work for 30 years, Mr. Duchaine's duties will include special feature writing, advertising, and general work for the products and resort development of the company.

The American Playground Device Co. purchased the entire town of Nahma last September, and has launched a program for its development as a recreational-industrial community. This spring the manufacturer will begin construction of a factory for the production of swings, slides, Castle Towers, and other items in its line of beach, pool, park, picnic, and playground equipment. It also will develop Nahma, with its 4,300 acres of forest land bordering on Big Bay de Noc and Sturgeon River, nine-hole golf course, and other facilities, as an outstanding year-round resort.

Research Chemist For Chlorine Institute

The Chlorine Institute, Inc., 50 E. 41st St., New York 17, N. Y., announces the appointment of Virgil W. Langworthy as research chemist, succeeding Harry A. Faber, recently resigned.

A member of the American Water Works Association, Mr. Langworthy had previously been Chief Operator of the Municipal Water Conditioning Plant for Adrian, Mich.

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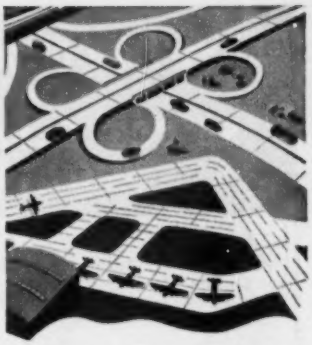

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. . . under *all* conditions

Don't let your concrete pavements run up unnecessary repair bills.

Keep destructive moisture and other foreign matter out of the joints with

*Flintseal** **Hot-poured joint-sealing Compound**

(Fed. Spec. SS-F-336a)

One application lasts for years and years. Flintseal holds its bond *firmly* and seals *positively* throughout cycles of hot and cold weather.

SEND FOR THIS NEW FOLDER

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ACE System — **DOES THE JOB EFFECTIVELY—QUICKLY**

Your first requirement for proper sanitation is proper sewer cleaning. Fast service, modern equipment, streamlined methods make ACE your best bet for proper sewer cleaning. Skilled crews, constant supervision gets the job done . . . when you want it; the way you want it. Ask to see our 21-minute newsreel movie of the Kansas City flood. No cost or obligation.

SAVE from 60% to 80% ON WATER MAIN CLEANING COSTS

ACE System — **BRINGS AT LEAST 95% EFFECTIVENESS TO WATER MAINS**

ACE-SYSTEM removes chemical and solidified deposits, tuburculations and algae from water mains. Firefighting operations improve and lower underwriters fire insurance rates are obtained through effective pipe cleaning. Rehabilitate the old pipe before adding extensions.

Write, Wire, Call Collect for Free Estimates. No Obligation.

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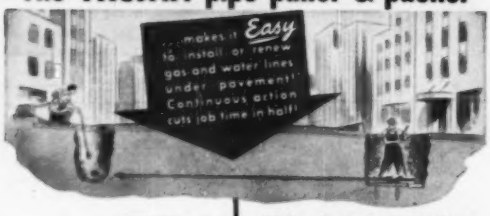

MODEL A for ½" to 1" pipe

MODEL B for 2" pipe and under

WRITE TODAY FOR FULL DETAILS

With a Trojan, no resetting of grip is required—job goes twice as fast. Heavy duty, all steel construction makes it 4 times stronger than cast iron pusher.

Model A needs only 5 ft. trench. One man can easily lift it in and out of trench and install the average service. 15 tons of pushing pressure possible.

Model B has 3 pushing speeds for different soils. Reversible in 30 seconds.

Double XX heavy, 30" push pipe travels straighter.

The TROJAN Manufacturing Co.
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M-SCOPE PIPE LOCATOR

Light-Weight MODEL-AB
Only $149.50
Metal Cased Cabinets
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THE AMERICAN CITY, 470 Fourth Ave., N. Y. 16

General Electric's Regional Manager

John T. Harrington has been appointed a regional manager for General Electric's communication equipment, it was reported by Lacy W. Goostree, Jr., communication equipment sales manager. The company is located at Electronics Park, Syracuse, N. Y.

J. T. Harrington

From his headquarters at 963 Commonwealth Ave., Boston, Mass., Mr. Harrington will be responsible for the sale of communication equipment in all New England states, New York, northeastern Pennsylvania, New Jersey, Maryland, and Virginia.

A district sales representative for G-E communication equipment at Boston since 1945, he served as Chief of Police at Phillipston, Mass. from 1935 to 1945. Mr. Harrington is a member of the International Chiefs of Police Association and the Board of Directors of the Eastern States Police Radio League.

Ball-Type Backstop For Vertical Motors

When electric motor current ceases, a vertical turbine water pump backspins unless means are provided to prevent motor reversal and avoid damage to pump bearings. A new method of preventing reversal of U. S. vertical hollowshaft motors has been developed by U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles 54, Calif.

The device is known as the U. S. Ballomatic, and uses balls to provide the backstop. When the motor starts, the centrifugal force throws the hardened steel balls out of engagement with the stationary member. When the motor stops, gravity pulls the balls down and one of them engages between the rotating member and the stationary ratchet, thus preventing reversal.

The backstop is designed with a different number of balls and ratchet flutes which multiplies the possible number of locking positions in one rotation, thereby reducing impact and resultant wear to the minimum.

To prevent reversal or back-spin of pump when power shuts off, employ this U. S. Ballomatic backstop for vertical motors.

Sewer Joint Packing

Ropax sewer joint packing, to be used in conjunction with bituminous joint sealing compounds, has been introduced by the Presstite Engrg. Co., 3900 Chouteau Ave., St. Louis 10, Mo.

According to the company, Ropax is engineered to meet the need for tighter sewer joints where there are adverse soil conditions, excessive groundwater, and low infiltration requirements. The product has a processed fibrous core impregnated and saturated with a blend of selected asphalts. When caulked, Ropax compresses and conforms in a compact mass to the shape of the bell, forcing the asphalt saturant into the pores and crevices of the pipe to effect a watertight seal.

Photo Copies of Records and Plans

A fast, inexpensive way to make copies of records, drawings, engineering plans, and other important documents is described in a new booklet just released by Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y.

The brochure describes how the company's Portagraph unit copies anything regardless of paper, color of ink, pencil, crayon, type, printwork, or handwriting, and does it without a darkroom.

Every city, town, village where sewer pipe, water or gas lines are laid has buried thousands of dollars in the ground.

It's buried treasure . . . easy to locate but of value only if it has the proper crushing, beam, shock and bursting strength properties.

Cast Iron Pipe serves for centuries. Figures prove it . . . so does the pipe itself! Available in sizes from 2 inches to 84 inches.

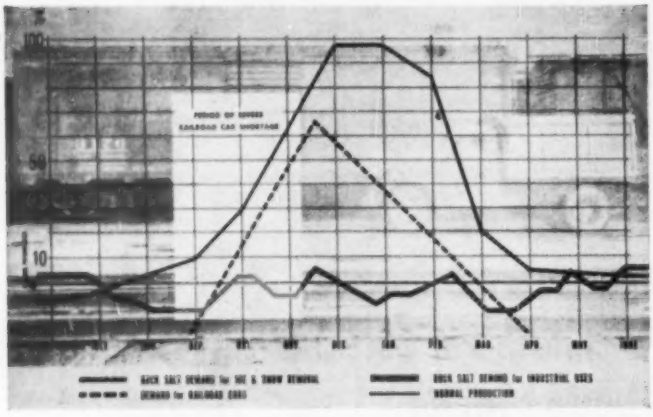
Send for prices and specifications!

Warren FOUNDRY & PIPE CORP.
55 LIBERTY STREET, NEW YORK 5, N. Y.
Bell & Spigot Pipe • Flange Pipe • Mechanical Joint Pipe
Flexible Joint Pipe • Short Body Bell & Spigot Specials
WARREN PIPE CO. OF MASS. INC. 75 FEDERAL ST. BOSTON, MASS.

95 Years of Continuous Service

"A smart man buys before the snow flies!"

THIS CHART SHOWS WHY



75% of next winter's SALT should be in your bins before October!

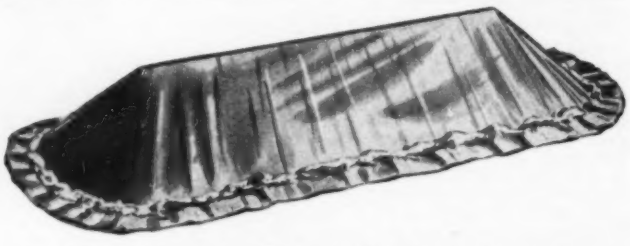
Look at the chart. Notice the terrific Rock Salt demand between September and March. Note, too, the shortage of freight cars during October, November and December. These are the months you'll want Rock Salt in a hurry for highway snow and ice removal, and while we'd like to fill your order promptly, 12 weeks—2½ months—will be our best delivery time!

Maybe next winter seems far away. But don't let the calendar fool you! When it comes to delivery of Rock Salt for snow and ice control, during the winter months and demand is heavy . . . you have three strikes against you already. But you are not necessarily out, if you have a good supply of Cayuga Rock Salt stocked in your storage bins.

Cayuga Rock Salt • NATURE'S PURE PRODUCT

Mined 2000 Feet Below Historic Cayuga Lake

STORE IT UNDER SENSATIONAL NEW RAYN-SHED



Pile your Rock Salt on any hardened surface—such as an abandoned strip of road, or on tar paper —then cover it easily and quickly with RAYN-SHED.

WHAT IS RAYN-SHED?

RAYN-SHED is a durable, watertight, weather-resistant vinylite plastic sheet, carefully sewed into large strips, which in turn may be cemented together on the job to form even larger coverings as your salt pile grows. Sizes are standardized, so that easily made combinations will cover bulk salt piles of 2 to 20 carloads. RAYN-SHED is equally suitable to use over piles of bag salt.

CAYUGA ROCK SALT CO., INC., MYERS, N. Y.

SIZES FOR ALL PURPOSES — *Call Nearest Distributor* — **BULK OR BAGS**

W. H. SHURTLEFF CO.
3½ Union Wharf,
Portland 2, Maine
Telephone 3-7661
also
Dutton Street, Bangor, Maine
Telephone 7993

BARNES SALT COMPANY
Cannon Bassett and Indian Streets
Providence, Rhode Island
Telephone Dexter 1-7279

SOUTHERN SALT COMPANY
222 West Main Street
Norfolk, Va.
Telephone 2-6024

THE CHEMICAL CORPORATION
54 Waltham Ave., Springfield 3, Mass.
Telephone 9-5091

Warehouses:
Pittsfield, Mass.
Telephone 2-0718
Boston, Mass.—30 Boylston St.
Telephone Liberty 2-7171
Hartford, Conn.
Telephone 6-3223
Concord, N. H.
Telephone 3394
New Haven, Conn.
Telephone 9-3827

CHAS. SCHAEFER & SON, INC.
504 Meserole Street, Brooklyn 6, N. Y.
Telephone Hyacinth 7-2400

CHAS. SCHAEFER & SON, of N. J., Inc.
Townley, N. J.
P. O. Box 230, Elizabeth, N. J.
Telephone Elizabeth 2-7010

KERR SALT COMPANY
939 North Delaware Ave.,
Philadelphia 23, Pa.
Telephone Market 7-4494

KERR SALT COMPANY
901 South Wolfe Street,
Baltimore 31, Md.
Telephone Wolfe 0232

E. J. PEDIGAN, INC.
Anderson & Isabella Streets
N. S. Pittsburgh 12, Pa.
Telephone Cedar 1-6700

WATKINS SALT CO.
Watkins Glen, N. Y.
Telephone 13

YOUNGSTOWN BUILDING MATERIAL & FUEL CO.
1305 Logan Avenue
Youngstown 4, Ohio
Telephone 3-4101

OBRECHT SALT COMANY
237 President St.,
Baltimore 2, Md.
Telephone Saratoga 2370

INDUSTRIAL SALT SERVICE
A Division of Highway Materials Co., Inc., Groton, N. Y.
Telephone Groton 154

Branch Warehouses:
Congers, Rockland Co., N. Y.
Niagara Falls, N. Y. (Lehigh Valley R. R. Co. Roundhouse)

A. F. NILSON, Sales Engineer
12 Mercer Ave., Chatham, N. J.
Telephone Chatham 4-7000

Alwin F. Franz is President Of Colorado Fuel and Iron

Alwin F. Franz was elected president of The Colorado Fuel and Iron Corp., 575 Madison Ave., New York 22, N. Y., at a meeting of the Board of Directors. The announcement was made by Charles Allen, Jr., chairman of the board.

A. F. Franz

At the same time, Carl W. Meyers, president of the company since 1946, was elected vice-chairman of the board.

Since 1949, Mr. Franz has been executive vice-president and a director since 1948, prior to which he was vice-president in charge of operations.

Under the leadership of Mr. Allen, Mr. Meyers, and Mr. Franz, the company recently completed a $50,000,000 financing program which will be used to build a new seamless pipe mill at Pueblo, Colo., and for other plant improvements.

The Colorado Fuel & Iron Corp. is the ninth largest steel producer in the United States. It operates steel plants at Pueblo, Colo.; Buffalo, N. Y., and Claymont, Dela., and a Blast Furnace Division at Birdsboro, Pa. Its seven fabricating plants are located at Palmer, Clinton, and Worcester, Mass.; Mount Wolf, Pa., and South San Francisco, and Oakland, Calif.

New Adding Machine

New Underwood Leader electric adding machine of 8-column totalling capacity offered by the Underwood Corp., One Park Ave., New York 16, N. Y. It is known as the Model 78 SP.

The
SEWER SCOOTER*
* Trademark

Sewers Clean Themselves With a Sewer Scooter

100% self-propelled for 6" to 96" sewers—Is equally effective for all conditions and problems of sewer maintenance—completely cleans sewers of all sediments: rocks, gravel, sand and "hard-to-move" sludge. Quick and efficient in operation. Investigate today! Ask for Bulletin.

Dealers—Some good territory open

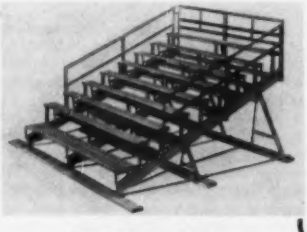
Fitzgerald Engineering Co., Inc.
P. O. Box 289-G.
Coral Gables 34, Fla.

Ironworkers HUSSEY Since 1835

PORTABLE SEATING FOR EVERY OCCASION

With Hussey Patented Portable Steel Bleachers and Grandstands, one set of seats will take care of both your indoor and outdoor needs. They cannot collapse and can be erected and taken down faster and easier than any other stand on the market. Low in cost. Available in 6, 10 and 15 tier 12 foot sections.

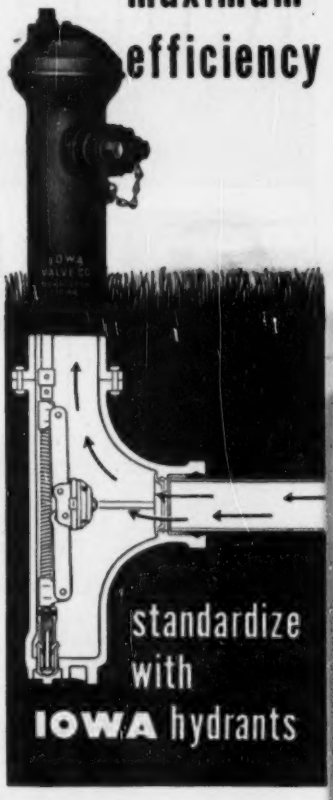
FREE catalogs and complete information on request. Write today.



Single Section — Model 8
Portable Steel Grandstand

Hussey Mfg. Co., Inc. • 526 R.R. Ave • N. Berwick, Me.
Also Mfrs. of Water Sports Equipment, Flag Poles, Fire Escapes and Misc. Iron.

for maximum efficiency



standardize with **IOWA** hydrants

Two piece operating nut with special adjustment screw solves the problems of expansion and contraction . . . makes Iowa hydrants easy to operate at all times.

Positive operating mechanical drain valve can be removed along with all other working parts through top of hydrant without special tools.

Fixed position of valve arms makes leaking impossible should standpipe be broken.

Unrestricted water flow gives full pressure at extreme low loss of head.

Built to conform to the latest A.W.W.A. specifications.

IOWA VALVE COMPANY
201-299 N. Talman Avenue • Chicago 80, Illinois
A subsidiary of James B. Clow & Sons

KARPARK

MEETS THE SPECIAL NEEDS OF EVERY CITY
WITH THE RIGHT METER FOR THE PURPOSE

The "First Family" of Parking Meters

WRITE FOR FULL DATA TO THE KARPARK CORPORATION, CINCINNATI 6, OHIO

THE WISE CHOICE

The Steel Head
SUPERIOR
Supreme in strength; in resistance to damage and vandalism.

The Low Cost
HUSKY
Makes Karpark dependability available at a minimum investment.

The Versatile
TWIN-O-MATIC
One installation times two cars; has every wanted feature.

The Adaptable
UNIMATIC
Takes care of any parking situation—beautifully and efficiently.

General Sales Manager For Blaw-Knox Division

The Blaw-Knox Co., 2009 Farmers Bank Building, Pittsburgh 22, Pa., announces the appointment of Arthur A. Levison as vice-president and general sales manager of its Blaw-Knox Division. He will administer the sales and engineering functions for all departments of this division. Mr. Levison had been a division vice-president in charge of the Construction Equipment Department.

A. A. Levison

Also reported was the appointment of H. Russell Loxterman as assistant general sales manager of the division.

Discussion on Corrosion Caused by De-icing Salts

A discussion of de-icing salt corrosion took place at the February meeting of the Metropolitan New York Section of the National Association of Corrosion Engineers, 420 Lexington Ave., New York 17, N. Y., which was attended by 90 members and guests, including seven representatives of the newly formed Technical Practices Committee TP-19—"Corrosion by De-icing Salt."

Charles T. Roland of Calgon, Inc., Hagan Building, Pittsburgh 30, Pa., presented a paper entitled "The Corrosion Effects and Inhibition of Street De-icing Salts." In reviewing the problems encountered by cities in keeping highways and streets open for traffic, Mr. Roland pointed to the widespread use of sodium and calcium chlorides for melting snow. Corrosion of automobiles by street brines led to investigations of preventive measures in Akron and Rochester, including the use of chromate and polyphosphate inhibitors which are premixed with the de-icing salt. Alternate immersion tests on steel panels showed that corrosion could be reduced approximately 80% by the inhibitors.

Mr. Roland reported that the City of New York is conducting tests on its Department of Sanitation trucks operating in selected areas of the city where controlled conditions prevail.

Discussion of Mr. Roland's paper revealed that significant factors other than de-icing salt are probably responsible for much automobile corrosion. The need for further investigation to determine these factors was emphasized.

Newly elected officers were installed at this meeting. They include: K. H. Roll, Lead Industries Association, who is chairman; George Hull, Anglo-American Varnish Co., vice-chairman, and F. J. Le Febvre, Electro Rust Proofing Corp., secretary-treasurer.

At the next session of the section, April 23, Dr. H. H. Uhlig of the Massachusetts Institute of Technology, will speak on corrosion problems, and T. Zajac, Shell Oil Co., chairman of N.A.C.E. Technical Practices Committee, will review work accomplished by various N.A.C.E. technical groups.

Kempton H. Roll, chairman of the Metropolitan New York Section of the National Association of Corrosion Engineers, presided at the February meeting at which the topic of discussion was the corrosion effects and inhibition of street de-icing salt. Charles T. Roland, corrosion engineer, of Calgon, Inc., Pittsburgh 30, Pa., (at the right) was the principal speaker.

Caterpillar Tractor's Assistant Treasurer

George J. Wellner, formerly with the First National Bank of Chicago, has been elected assistant treasurer of the Caterpillar Tractor Co., Peoria 8, Ill., it is announced by V. V. Grant, treasurer.

G. J. Wellner

Mr. Wellner succeeds George L. Scripps, who was recently named as secretary-treasurer of the Trackson Co., in Milwaukee. Mr. Wellner had been with the Chicago bank since 1936, most recently serving as assistant cashier and a loaning officer. He is a member of the American Institute of Banking.

Swiss Scientist Receives U. S. Patents for New Water-Hardness Tests

Dr. Gerold Schwarzenbach, Swiss scientist, has been granted U. S. patents Nos. 2583890 and 2583891 which cover the new water-hardness tests that have gained widespread use in the past two years in this country. The Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa., combustion and chemical engineering firm, and its affiliated companies, which are licensed under these patents, confirmed reports in industrial circles that official notice of these patents had been received.

Dr. Schwarzenbach, professor of chemistry at the University of Zurich and associated with the Swiss firm, Chemische Fabrik Uetikon in this development, is credited with revolutionizing the test procedures for water hardness. His method for total hardness determination has proved rapid, simple, and accurate within 1 part per million, compared with the century-old "soap-shaking" method which is slow, cumbersome, and involves considerable subjective judgment.

A spokesman for the Hagan Corp. states that its affiliate, Hall Laboratories, Inc., engineering consultants on industrial water problems, had worked out modified procedures, reagents, and equipment which make the basic Schwarzenbach methods convenient for field use.

This shows what is needed to make the new test. The graduate tube measures the sample. The porcelain dish holds it as buffer solution and indicator are added.

Chicago Pump Co. Moves Offices

The Chicago Pump Co. announces that its executive and general offices have been moved to 622 Diversey Parkway, Chicago 14, Ill. The Purchasing Department also will be located there.

There will be no change in the location of the factories at 2300 Wolfram St., Chicago 18, Ill. The concern reports that this move does not affect any instructions for delivery of material to either plant.

Johnston Lawn Mower To Build Mississippi Plant

O. T. Jacobsen, president of the Jacobsen Mfg. Co., Racine, Wis., reports that because of growth of its normal business as well as prospective work in the defense effort, it has been necessary to expand the operations of one of its subsidiaries, the Johnston Lawn Mower Corp., Ottumwa, Iowa.

The plant will be located in Brookhaven, Miss., where it will manufacture power lawn mowers and engage in defense work. The building will contain 100,000 square feet in addition to office space.

Construction is expected to start as soon as priority and other details can be cleared.

TRENCH POURED

BELL & SPIGOT JOINTS

Specify McWANE-PACIFIC CENTRIFUGAL PIPE

So, you like to pour your own joints! OK! Trench-poured joints have been a stand-by for close to two centuries. Many thousands of miles of cast iron pipe line with this old stand-by joint have long been in service. Specify McWane-Pacific Super DeLavaud Cast Iron Pipe, in 18-foot lengths. Bells and spigots are uniform, make better trench-poured joints. The pipe is strong, easy to cut and tap. For complete data and prices, write or wire.

McWANE Cast Iron Pipe Company
Birmingham, Ala.
Pipe Sizes 2" thru 12"

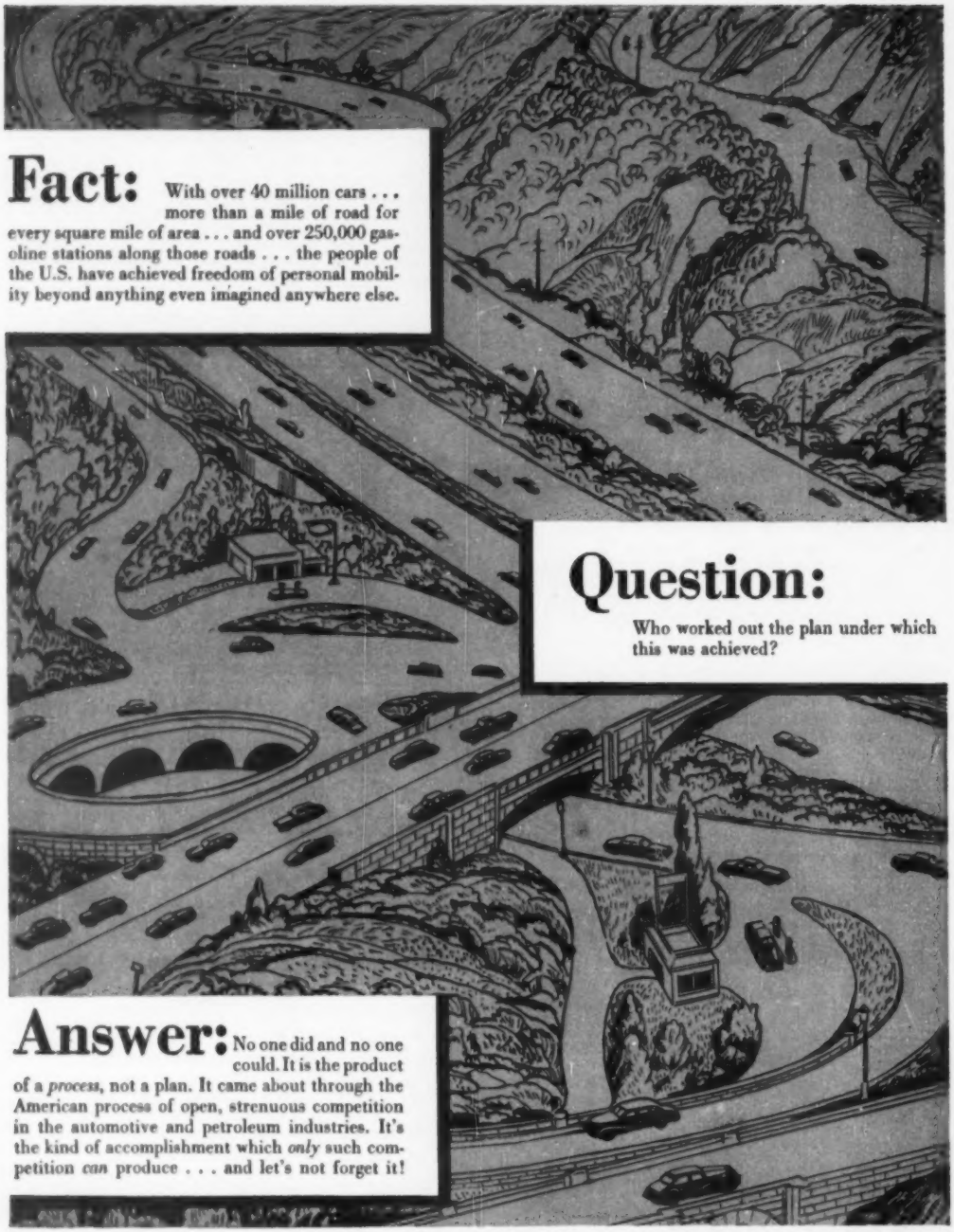
Sales Offices

Birmingham 2, Ala.	P. O. Box 2601
Chicago 1, Ill.	333 North Michigan Ave.
New York 4, N. Y.	85 Broad Street
Kansas City 6, Mo.	1006 Grand Avenue
Dallas, Texas	1501 Mercantile Bk. Bldg.

PACIFIC STATES Cast Iron Pipe Co.
Provo, Utah
Pipe Sizes 2" thru 24"

Sales Offices

Provo, Utah	P. O. Box 18
Denver 2, Colo.	1921 Blake Street
Los Angeles 48, Cal.	6399 Wilshire Blvd.
San Francisco 4, Cal.	235 Montgomery St.
Portland 4, Oreg.	501 Portland Trust Bldg.
Salt Lake City	Waterworks Equip't Co.



Fact: With over 40 million cars . . . more than a mile of road for every square mile of area . . . and over 250,000 gasoline stations along those roads . . . the people of the U.S. have achieved freedom of personal mobility beyond anything even imagined anywhere else.

Question:

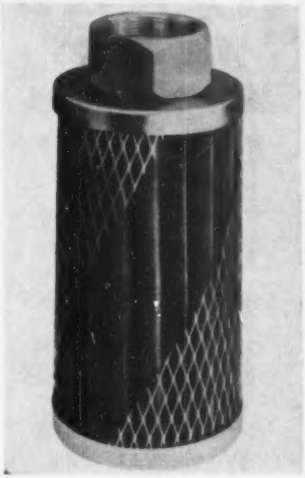
Who worked out the plan under which this was achieved?

Answer: No one did and no one could. It is the product of a *process*, not a plan. It came about through the American process of open, strenuous competition in the automotive and petroleum industries. It's the kind of accomplishment which *only* such competition *can* produce . . . and let's not forget it!

This report on PROGRESS-FOR-PEOPLE is published by this magazine in cooperation with National Business Publications, Inc., as a public service. This material, including illustration, may be used, with or without credit, in plant city advertisements, employee publications, house organs, speeches or in any other manner.

The competitive system delivers the most to the greatest number of people

A Filter for Hydraulic Hoists



Wherever hydraulic hoists are used, whether in maintenance garages for truck hoists, in dump trucks, or in controlling bulldozer blades, grader blades, loader buckets, or other equipment, the Marvel Synclinal Filter will reduce maintenance problems, according to the Marvel Engineering Co., 625 W. Jackson Blvd., Chicago 5, Ill.

The filters insure clean hydraulic fluid. New models have capacities of 75 and 100 gallons per minute. Other models range from 5 gallons per minute up through 8, 10, 20, 30, and 50.

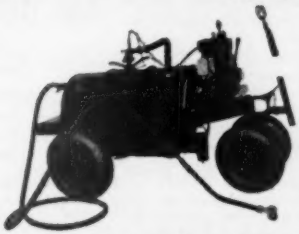
Manages Power Tool Sales For Henry Disston & Sons

John H. Dingee, former advertising and sales promotion manager for Henry Disston & Sons, Inc., Philadelphia 35, Pa., has been appointed sales manager of the Power Tool Division. He succeeds William P. Gillespie, who has been named sales manager of the Hardware Division.

J. H. Dingee

Mr. Dingee joined Disston, 112-year-old manufacturer of saws, tools, and special alloy steels, in 1947 as sales promotion manager. In 1948 he became advertising manager for the company. He is a member of the National Industrial Advertisers Association and president of the Eastern Industrial Advertisers Association of Philadelphia.

FAST and CLEAN



"direct from the shipping drum" with a

TARCO SPRAYER

MATERIALS HANDLED: Bituminous Binders: asphalt emulsions, light tars and cutbacks; Concrete Curing; Waterproofing; Weed Killers; Cleaning Solvents; Oil Base Paints. (Tempering Tank for heating heavier tars and asphalts.)

ADVANTAGES: 1. Lower handling costs, 2. faster, cleaner, more economical application, 3. larger daily thru-put, 4. easier, SAFER operation, 5. lower repair and maintenance.

OTHER PRODUCTS

Tar and Asphalt Pouring Pots — "Flash Flame" Aggregate Dryer
"Scotchman" Spreader — Can Carriers
Soil Pasteurizer

TARRANT MFG. CO.

EAST AVE. — **SARATOGA SPRINGS, N. Y.**

SOIL COMPACTION

Cuts Costs on **TRENCH JOBS!**

Use BARCO RAMMERS

SPEED UP trench *backfill* jobs! End the nuisance of expensive "go back's" to add more dirt and to repair settled pavement areas. Use Barco Rammers to get HIGH DEGREE COMPACTION of original backfill *immediately*.

Experienced municipal engineers report that one man with a Barco Rammer can tamp trench 18" wide at the rate of 360 to 600 feet per hour, with lifts up to 24", hour after hour!

ASK FOR DEMONSTRATION

The Barco Rammer is a new tool with many uses! Tamps backfill to 95% compaction at amazingly low cost — Let us show you actual figures. Ask for our nearest distributor to give you a demonstration.

• Send for CATALOG No. 621

BARCO MANUFACTURING COMPANY
1835-E Winnemac Ave.,
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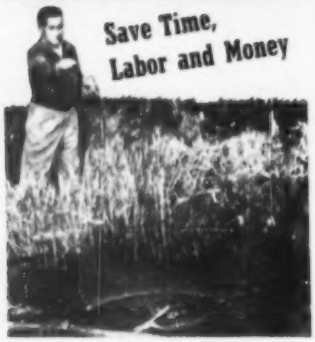
Builders of Portable Gasoline HAMMERS and RAMMERS

KILL MOSQUITO LARVAE
20 TIMES FASTER WITH
TOSSITS
Reg. U.S. Pat. Off.



NO SPECIES IMMUNE!

New Formula Including DDT and BHC Gives 100% Kill In All Breeding Places

SWAMPS • CANALS • CATCH BASINS
RAIN POOLS • DITCHES

You simply toss in infested water ...capsule dissolves and the solution spreads rapidly in all directions forming a film of larvae-killing insecticides over the surface of the water. One Tossit will larvacide 1,000 square feet of water surface.

YOU CANNOT OVERESTIMATE THE EFFECTIVENESS OF TIME-TESTED, CLEAN, SAFE AND EASY-TO-HANDLE TOSSITS...ESPECIALLY IN HARD-TO-REACH BREEDING AREAS!

- Tossits make it possible to larvacide areas inaccessible to power spraying equipment...and areas hard to reach with hand spraying equipment.
- Tossits permit wider distribution of Field Men with consequent savings of valuable time. One competent man can carry several hundred Tossits, make his own inspections and do the larvaciding work of five men with hand equipment.
- In a matter of minutes, one man with 50 Tossits can larvacide an acre of dense breeding ground . . . or 50 isolated rain pools . . . at an average cost of $1.50.

In Every Instance...TOSSITS ARE CHEAPER —MORE EFFECTIVE THAN HAND SPRAYING

Write Today for Leaflet and Special Price List for Cities, Counties and States

SENTCO INC.
2400 North Tamarind Avenue,
West Palm Beach, Florida

Fibre Products Sales Engineer for Line Material

Harold C. Puls has been appointed sales engineer of the Fibre Products Division, according to an announcement by the Line Material Co., Milwaukee 1, Wis. He will be concerned primarily with the company's line of fibre pipe, specializing in sewage disposal problems of municipalities.

H. C. Puls

The manufacturer reports that this new office has been created because of an expanded fibre products sales program, necessitated by the opening of the new fibre products plant at Sherman, Texas.

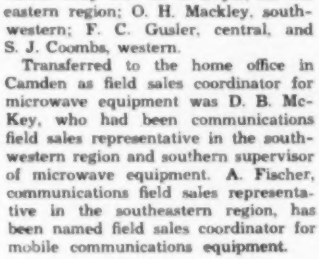
RCA Communications Sales Manager

Russell C. C. Dubois, Jr., has been appointed sales manager for RCA mobile and microwave communications equipment, it was announced by A. R. Hopkins, general sales manager of the RCA Engineering Products Department, Radio Corporation of America, Camden 2, N. J. Mr. Dubois succeeds Dana Pratt, who has moved into the position of product manager for RCA broadcast transmitters.

Also reported was the promotion of four communication field sales representatives to the rank of district supervisors. They are: H. G. Boyle, for the eastern region; O. H. Mackley, southwestern; F. C. Gusler, central, and S. J. Coombs, western.

Transferred to the home office in Camden as field sales coordinator for microwave equipment was D. B. McKey, who had been communications field sales representative in the southwestern region and southern supervisor of microwave equipment. A. Fischer, communications field sales representative in the southeastern region, has been named field sales coordinator for mobile communications equipment.

Richmond's New Fire Truck



One of three Oren Model 1500 pumpers recently delivered to Richmond, Va., featuring push-button primed pumps, full-swivel Deluge guns, and all of the latest Oren improvements. The fire truck is made by the Oren Roanoke Corp., Roanoke 16, Va.

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MANUFACTURER'S
AGENT OR SALESMAN,
NOW CALLING ON
CITY & TOWN
OFFICIALS
TO SELL
STREET NAME SIGNS
ON A COMMISSION
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CHOICE TERRITORY
STILL AVAILABLE
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Brooklyn 22, New York

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For durability and economy

FOR REPAIRING: Reservoirs, Dams, Filter Plants, Sewage Disposal Plants, Tanks, Stadiums, Bridges, Sea Walls, Breakwaters.

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FOR CONSTRUCTING: Prestressed Tanks, Stacks, Piles, Side Walls and Roofs, Steel Encasements.

The proper maintenance and repair of structures is more important now than ever before.

Write for 48-page illustrated booklet showing "GUNITE" at work.

Nationwide operation Experienced Personnel

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Sewerage — Power Generation
Civic Opera Bldg. Chicago 6, Ill.

The American Public Utilities Bureau
Organized to assist municipalities and public groups in utility valuations, rates, franchises, accounting and surveys.
John Bauer, Ph.D., Director
280 Broadway, New York City 7

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One-quarter Century of Experience
Planimetric and topographic maps, controlled mosaics, Stereograms, relief models, large-scale atlas sheets.
The complete job—photography—compilation—to finished survey.
Oblique photographs for pictorial views—for project presentation.
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Consulting Engineers
Organized 1907
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Railway Exchange Bldg., Kansas City 6, Mo.

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Milwaukee 2, Wis. • New York • Chicago • and other Principal Cities
Appraisals of Municipal Properties: Schools, Utilities, Hospitals, City and County Administrative Buildings For Insurance and Accounting Purposes

ASSOCIATED CONSULTANTS
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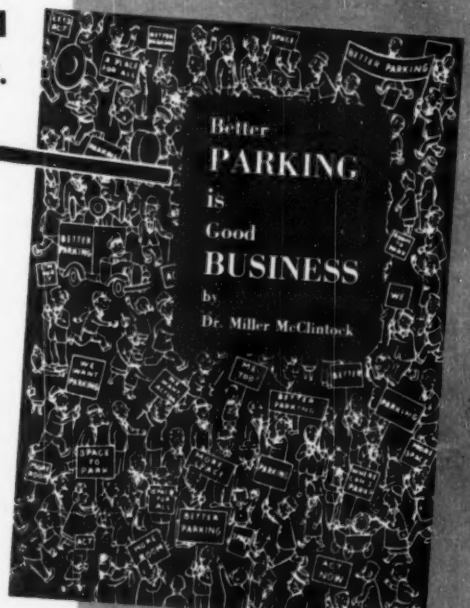

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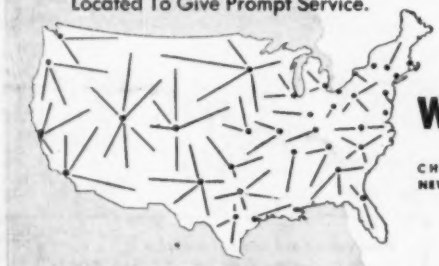

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